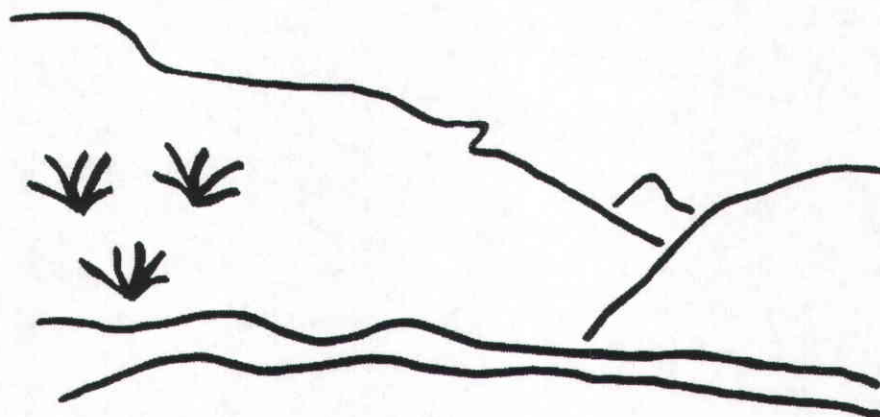


State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Horizon Mine
Hidden Splendor Resources, Inc.
Technical Analysis
April 10, 2008

File in:

☐ Confidential

☐ Shelf

☒ Expandable

Refer to Record No. 0010 Date 4/16/2008

In CR 0070020, 2008, Outgoing

For additional information

TABLE OF CONTENTS

TECHNICAL ANALYSIS DESCRIPTION.....	1
GENERAL CONTENTS.....	3
IDENTIFICATION OF INTERESTS	3
VIOLATION INFORMATION.....	3
RIGHT OF ENTRY	4
LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS.....	4
PERMIT TERM.....	5
PUBLIC NOTICE AND COMMENT	5
FILING FEE	6
PERMIT APPLICATION FORMAT AND CONTENTS	6
REPORTING OF TECHNICAL DATA	6
MAPS AND PLANS	7
COMPLETENESS.....	7
ENVIRONMENTAL RESOURCE INFORMATION	9
GENERAL.....	9
PERMIT AREA	9
HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION.....	10
CLIMATOLOGICAL RESOURCE INFORMATION	10
VEGETATION RESOURCE INFORMATION	11
FISH AND WILDLIFE RESOURCE INFORMATION	11
SOILS RESOURCE INFORMATION.....	12
LAND-USE RESOURCE INFORMATION.....	13
ALLUVIAL VALLEY FLOORS	13
Alluvial Valley Floor Determination	13
Applicability of Statutory Exclusions.....	14
PRIME FARMLAND.....	14
GEOLOGIC RESOURCE INFORMATION	15
HYDROLOGIC RESOURCE INFORMATION	20
Sampling and Analysis	20
Baseline Information.....	20
Baseline Cumulative Impact Area Information	28
Modeling.....	29
Probable Hydrologic Consequences Determination	29
Groundwater Monitoring Plan	38
Surface-Water Monitoring Plan.....	39
MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION.....	39
Affected Area Boundary Maps	39
Archeological Site Maps.....	40
Coal Resource and Geologic Information Maps.....	40
Cultural Resource Maps.....	40
Existing Structures and Facilities Maps.....	40
Existing Surface Configuration Maps.....	41
Mine Workings Maps	41
Monitoring and Sampling Location Maps	41

TABLE OF CONTENTS

Permit Area Boundary Maps	41
Surface and Subsurface Ownership Maps	41
Surface Water Resource Maps.....	42
Vegetation Reference Area Maps	42
Well Maps.....	42
OPERATION PLAN	43
MINING OPERATIONS AND FACILITIES.....	43
EXISTING STRUCTURES:	43
PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES	43
RELOCATION OR USE OF PUBLIC ROADS	44
AIR POLLUTION CONTROL PLAN.....	44
COAL RECOVERY	44
SUBSIDENCE CONTROL PLAN.....	45
Renewable Resources Survey	45
Subsidence Control Plan	45
Performance Standards For Subsidence Control	47
Notification	48
SLIDES AND OTHER DAMAGE	48
FISH AND WILDLIFE INFORMATION	48
Protection and Enhancement Plan	48
Endangered and Threatened Species	49
Bald and Golden Eagles.....	49
Wetlands and Habitats of Unusually High Value for Fish and Wildlife	50
TOPSOIL AND SUBSOIL.....	50
Topsoil Removal and Storage.....	50
VEGETATION	50
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES	51
Road Classification System	51
Plans and Drawings.....	51
Primary Road Certification	51
Other Transportation Facilities	51
SPOIL AND WASTE MATERIALS	52
Disposal Of Noncoal Mine Wastes.....	52
Coal Mine Waste.....	52
Refuse Piles.....	52
HYDROLOGIC INFORMATION	53
General.....	53
Groundwater Monitoring	53
Surface Water Monitoring	54
Acid- and Toxic-Forming Materials and Underground Development Waste	54
Transfer of Wells	55
Discharges Into An Underground Mine.....	55
Gravity Discharges From Underground Mines.....	55
Water-Quality Standards And Effluent Limitations	55

TABLE OF CONTENTS

Diversions: General	56
Stream Buffer Zones	57
Sediment Control Measures	58
Siltation Structures: General	58
Siltation Structures: Sedimentation Ponds	59
Siltation Structures: Other Treatment Facilities	60
Siltation Structures: Exemptions	60
Discharge Structures	60
Impoundments	60
Ponds, Impoundments, Banks, Dams, and Embankments	61
Water Replacement	61
SUPPORT FACILITIES AND UTILITY INSTALLATIONS	61
SIGNS AND MARKERS	61
USE OF EXPLOSIVES	62
General Requirements	62
MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS	62
Affected Area Maps	62
Mining Facilities Maps	62
Mine Workings Maps	63
Monitoring and Sampling Location Maps	63
Certification Requirements	63
RECLAMATION PLAN	65
GENERAL REQUIREMENTS	65
POSTMINING LAND USES	65
PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES	66
APPROXIMATE ORIGINAL CONTOUR RESTORATION	66
BACKFILLING AND GRADING	66
General	67
MINE OPENINGS	67
TOPSOIL AND SUBSOIL	67
Redistribution	68
ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES	68
Reclamation	68
Retention	68
HYDROLOGIC INFORMATION	68
Hydrologic Reclamation Plan	68
CONTEMPORANEOUS RECLAMATION	69
General	69
REVEGETATION	70
Revegetation: General Requirements	70
Revegetation: Timing	70
Revegetation: Mulching and Other Soil Stabilizing Practices	70
Revegetation: Standards For Success	70
STABILIZATION OF SURFACE AREAS	71

TABLE OF CONTENTS

CESSATION OF OPERATIONS.....	71
MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS	72
Affected Area Boundary Maps	72
Bonded Area Map.....	72
Reclamation Backfilling And Grading Maps	72
Reclamation Facilities Maps.....	72
Final Surface Configuration Maps.....	73
Reclamation Monitoring And Sampling Location Maps.....	73
Reclamation Surface And Subsurface Manmade Features Maps	73
Reclamation Treatments Maps	73
Certification Requirements.	73
BONDING AND INSURANCE REQUIREMENTS.....	74
General.....	74
Form of Bond.....	74
Determination of Bond Amount	74
Terms and Conditions for Liability Insurance	74
CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA).....	75
APPENDICES	77
SUMMARY OF COMMITMENTS.....	79
PERMIT INFORMATION TABLE	81

TABLE OF CONTENTS

TECHNICAL ANALYSIS DESCRIPTION

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or application for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the minimum regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at <http://ogm.utah.gov>

The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the application is in compliance with the requirements of that section of the R645-Coal Mining Rules.

Page 2
C/007/0020
April 10, 2008

TECHNICAL ANALYSIS DESCRIPTION

GENERAL CONTENTS

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

Chapter 1 of the federal lease application is an introduction describing where mining activities are currently located, and the location of the proposed federal lease addition, (plate 1-1). Over all changes to the current operation and reclamation plan are relatively minor.

Ownership and control information is in Chapter 2 and Appendix 2-4. Hidden Splendor Resources, Inc. is incorporated under the laws of the state of Nevada and is in good standing with legal corporate existence. Hidden Splendor Resources is also the Permittee and mine operator. Alexander H. Walker III is the resident agent and Cecil Ann Walker will pay the abandoned mine land reclamation fee. Officers of the Permittee are listed on page 2-2 of the permit. The MRP includes the MSHA numbers for the Horizon # 1 and Horizon # 2 Mines. (6/2/2005)

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations. When the application is at or near final approval an AVS check is recommended.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

Neither the Permittee nor any of its subsidiaries, affiliates or persons controlled by or under common control with the Permittee has had a federal or state permit revoked or suspended or forfeited a bond in the last five years as noted on page 2-6 of the permit. There are no outstanding notices of violation.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The U. S. Bankruptcy Court for the Eastern District of Kentucky assigned the right, title, and interest to the Horizon Mine to Hidden Splendor on March 24, 2003. Hidden Splendor has the right to enter and undertake coal mining based on the assignment from Lodestar by its Chapter 11 trustee, the designation of Operator executed by Lodestar and the federal coal lease. The Horizon mine was issued a Right-of Way SL 063011 through the BLM lands in 1966 to facilitate mining coal from fee lands. Documents pertinent to these actions are included in appendices 2-1 and 2-3. (6/2/2005)

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The application includes the legal description and this matches the areas shown on the permit area maps. Copies of the leases for the areas proposed to be added to the permit area are located in Appendix 2-3. Page 2-7 of Chapter 2 describes the legal description of the permit boundary. On July 6, 2004 the Division received an "E" mail from Mr. Pappas noting the corrected legal description for the proposed public notice. The second parcel in Section 17 was changed from E1/2NE1/4 to W1/2NE1/4. The legal description in the application has been corrected also. Page 2-8 of Chapter 2 describes the status of unsuitability claims. The remaining portion of the lease is not within an area under study as an area designated as unsuitable for mining. There are no petitions filed with the D. O. G. M. that could affect the proposed lease application. As there is no surface disturbance associated with the mining of the additional lease

GENERAL CONTENTS

area there will be no activities within 300 feet of an occupied dwelling or 100 feet from a cemetery. (6/2/2005)

The proposed operations will neither be within 100 feet of a public road nor within 300 feet of an occupied dwelling. Coal haulage at the existing mine is within 100 feet of a public road, but the plan contains approval letters from Carbon County regarding use of the public road. The letters are included in Appendix 3-1 and discussed in Chapter 3.

According to the current MRP and application, no portion of the area to be permitted is within an area designated as unsuitable for mining, (plate 1-1).

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The permit term is five years and the current permit expires October 1, 2006.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The mineplan contains a copy of the proof of publication describing the ownership of the mine and land surface projected for the mine permit. The advertisements ran in The Sun Advocate on April 8, 2003. A copy of the affidavit of publication was received April 2, 2004. The plan also contains a public notice identifying the area of mine expansion in 2004. The expansion was published in July and August 2004. On July 6, 2004 the Division received an "E" mail from Mr. Pappas noting the corrected legal description for the proposed public notice.

GENERAL CONTENTS

For proof of publication a copy of the notice as published in the newspaper has been included in the application as Appendix 2-2 for the addition of the remaining portion of the federal lease. (6/2/2005).

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

A copy of the filing fee is currently on file with the Division, there is no fee required for this revision to the operation and reclamation plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The application format and contents are in concert with the requirements and guidelines of the Utah Coal Regulatory Program.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

GENERAL CONTENTS

Analysis:

Explicit citations in the References identify sources cited in the text. All referenced materials are available to the Division, although some must be obtained through the UGS library. (6/2/2005)

The Permittee's technical data have been analyzed under the requirements of the regulations.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

The maps and plans provided in the application as required are prepared by a certified professional engineer to appropriate scale.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

COMPLETENESS

Regulatory Reference: 30 CFR 777.15; R645-301-150.

Analysis:

The information in the application was determined to be administratively complete on October 11, 2000. The Permittee has also stated in the application that the information is believed to be complete and correct. The application for the federal lease addition was determined Administratively Complete by the Division on June 28, 2004. (6/2/2005)

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The MRP includes a description of the existing, pre-mining environmental resources within the proposed permit area and adjacent areas that may be affected or impacted by the proposed underground mining activities. (6/2/2005)

Surface impacts are discussed but are not expected. As with all mining there exists the potential of mine subsidence that can migrate to upper geologic units and effect surface- and ground-water systems, which can in turn affect land use. The Permittee has submitted information that considers potential impacts and describes means and methods to prevent or mitigate impacts. Information pertaining to the surface disturbance, structures, and their reclamation is provided in the Horizon MRP.

Findings:

The Permittee has submitted information sufficient to evaluate the proposed area of mining and mining techniques and methods to conduct mining operations.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The Permittee shows the new and old permit boundaries on Plate 1-1. Plate 1-1 shows the following:

- The old and new permit boundaries
- The disturbed area boundary
- Township, range and sections
- Topography (80-foot contours)
- Roads and stream

The Permittee included a legal description of the permit area in Section 114 of the MRP. The legal description is identical to the leases areas. The permit area contains 1,577 acres. (6/2/2005)

In Section 117 of the MRP the Permittee included a legal description of the disturbed area and acreage. The actual disturbed area contains 8.23 acres. The reclamation bond amount was calculated using 9.15 disturbed acres. The Permittee agreed to continue to list 9.15 acres as the official disturbed acreage.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

Appendix 5-1 contains the September 1995 "Historical, Cultural, and Paleontological Resource Study" by Baseline Data, Inc., and copies letters of concurrence from SHIPO dated May and October 1995. The Division has also received letters of concurrence from SHIPO dated June 10, 2005 in conjunction with mining in federal lease UTU-74804.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirements of this section.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

Climate is discussed in Chapter 11. The climate information in the plan was gathered the monitoring site of nearby Skyline Mine. The plan puts the respective average annual temperatures for 1993, at the Skyline Mine at 37.7°F. The respective cumulative annual precipitation amounts for these same locations at 27.37 inches. The coldest month of 1993 was

ENVIRONMENTAL RESOURCES INFORMATION

January, with an average temperature of -9°F, while the warmest month was August, with an average temperature of 80°F.

In the past the Division has recommended that the operator set up a weather station at the site so that precipitation events can be correlated with other monitoring data: this has not been done. (6/2/2005)

Findings:

The plan contains no site-specific climatological data, but an approximate range of data can be determined from the information scattered throughout the plan. The Division finds that this information meets the minimum regulatory requirements. The Division recommends, however, that the operator set up a weather station at the site so that precipitation events can be correlated with other monitoring data.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

Chapter 9 of the current operation and reclamation plan provides the vegetation resource information. Plate 9-1 depicting the vegetative communities and acreage has been updated to include the proposed permit area expansion. Vegetative communities include Oakbrush, Salina Wildrye, Maple/Oakbrush/Aspen, Fir/aspen, Alpine Herb/Grassland, Manzanita, and Sagebrush/grass/ Rabbitbrush. This information is adequate to predict the potential for reestablishing vegetation. Because there is no surface disturbance proposed with the mining in this area it is unlikely that there will be a need for reclamation practices to occur.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

The Fish and Wildlife Information in the application is referenced in Section 3.6 et seq, and discussed in Chapter 10 of the current plan. Plate 10-1 has been revised to include the proposed addition to the permit area. This map shows the proposed permit boundary, the location of two raptor nests and big game habitat. The map has been revised to show the identification and location of the three nests located during the May 12, 2000 raptor survey. The proposed addition to the permit area is divided into critical year-long elk habitat and critical summer deer and elk habitats. There is an additional map labeled 2000 Raptor Survey Jump Creek Quad. The map has been identified as Appendix 10-3 in the table of contents of Chapter 10. There are three digit numbers associated with each of the nests shown on the map, 482-Golden Eagle-inactive, 484-Golden Eagle-old/dilapidated, 936-American Kestrel-active.

The 2001 raptor survey is included in the 2001 annual report. It is labeled 2001 Raptor Survey-Horizon Mine, Jump Creek UT Quad. The map depicts the flight path of the survey that extends into and covers the majority of the proposed lease area. There were no nests identified in this area. The Division of Wildlife Resources (DWR) has provided the Permittee with a letter indicating that raptor surveys within the Horizon permit area were no longer necessary, (Appendix 10-3), Typically the Division requires a raptor survey current to the year of the permitting activity. In this case, because previous surveys have also shown no evidence of nesting raptors in the proposed lease area and the DWR supports no additional surveys, the 2001 survey would be sufficient. A copy of the letter from the DWR is included in the application. (6/2/2005)

Findings:

The information contained in this section of the application is adequate to meet the requirements of the regulations.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Section 2.117 states that the disturbed area contains 8.23 acres. The bond covers 9.15 acres. The permit and disturbed area boundaries are shown in Plate 1-1.

Chapter 8 covers soil survey information. A soil survey was conducted in 1990. The survey was conducted by Richard Foster, of the SCS. A disturbed area soils map Plate 8-1 was drawn by Patrick Collins (Mt Nebo, Scientific).

Plate 8-2 is a revised permit area soil map. The permit area boundary has been redrawn on this map to include federal lease UTU-74804.

Findings:

Information provided in the proposed amendment is considered adequate to meet the requirement of this section.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

The land use information is located in Chapter 4. Current land uses consist of grazing, logging, mining, mining reclamation activities, recreation and wildlife habitat. This permit application lies beneath an area that is undeveloped. The names, and addresses of the surface owners are provided and identified on plate 4-2. Plate 4-3 shows the ownership and location of the mineral tracts. The Permittee's legal right to enter is Presented in Chapter 2. The area to be mined is shown on Plate 1-1.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:**Alluvial Valley Floor Determination**

There is a letter in Appendix 7-6 from SCS dated 6/13/80 stating that there are no Alluvial Valley Floors in the area of Section 17, Township 13 South, Range 8 East. As this letter does not cover the revised permit area and as the Alluvial Valley Floor determination is the responsibility of the Division, the issue will be addressed here, on the basis of the information provided in the application. The additional lease area falls within Sections 7 and 8 on the north and Sections 18 and 17 on the south. The additional lease area is at an elevation of 7600 - 8400 feet and is bordered by Beaver Creek on the north. Beaver Creek lies in Sections 7 and 8.

The soil type along Beaver Creek at 8,300 ft elevation is #109 Silas-Brycan loams. The following soil description comes from the SCS Soil Survey¹: these soils are found in low areas adjacent to stream channels or on alluvial fans adjacent to narrow alluvial valleys. The water table fluctuates between 20 - 25 inches.

Surface mining will not be conducted in the area. The premining land use has been undeveloped rangeland utilized for grazing and the deposits of alluvium are small and do not support farms.

In accordance with R645-302-323, the Division finds that the premining land use is undeveloped rangeland which is not significant to farming and that the area of alluvium is small.

Applicability of Statutory Exclusions

Findings:

The Permittee has submitted sufficient information to address this section.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

The additional lease area is at an elevation of 7,600 – 8,400 ft and is bordered by Beaver Creek on the north, Gordon Creek on the south and is bisected by Jewkes Creek. In Figure 8-1, the prime farmland determination dated 9/12/1990 by the Soil Conservation Service states that there are no prime farmlands within Sections 7, 8, 17, 18 or 20 of Township 13 South, Range 8 East. The area covered in the lease application extends into Sections 7 and 8 on the north and Section 18 on the south.

The soils within the lease are were designated #107 (Shupert-Winetti complex) along Jewkes Creek , and #72 (Pathead/Curecanti family association) on the south facing slopes, #63 (Midfork family Podo association) on the north facing slopes and #109 (Silas-Brycan loams) in the Beaver Creek drainage with #124 on the north facing slopes and #72 on the south facing slopes.

Soil type #107 is deep and well drained. The mine surface facilities are located within this soil type.

¹USDA. SCS. 1988. Soil Survey of Carbon Area, Utah.

Findings:

The application provides the required information.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

Chapter 6 includes the geologic information for the Horizon Mine area in accordance with the requirements set forth in R645-301-600. The Permittee has submitted a stratigraphic column in Table 6-1. (6/2/2005)

Previously assembled geologic data obtained from Beaver Creek Coal Co. has been used as a basis for this chapter. The data from Beaver Creek Coal Co. included drill logs generated during their mining efforts. Information from recent geologic publications and in-house reports is also included to supplement the information obtained from Beaver Creek Coal Co. (6/2/2005)

The current coal mining plan includes geologic information in sufficient detail to assist in determining: the probable hydrologic consequences (PHC) for the operation. The PHC determination is required from the operator to identify potential impacts to the quality and quantity of surface and ground water in the permit and adjacent areas. identify where surface- and ground-water monitoring is necessary; whether reclamation can be accomplished; whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area; and provide information to prepare a subsidence control plan. (6/2/2005)

The minable seams for the area are found in the lower 350 feet of the Blackhawk Formation. Plates 6-2 and 6-3 are geologic cross-sections that illustrate the stratigraphic relationships of the Blackhawk and Star Point Formations and the mappable coal beds present in the Horizon No. 1 Mine area. (6/2/2005)

A total of eight coal seams can be identified in the Gordon Creek region; however, Hidden Splendor has plans to mine only the Hiawatha seam. Four of the eight seams are present in the mine area and outcrop on the walls of the North Fork of Gordon Creek Canyon, Coal Canyon, and Bryner Canyon. Weathering, burning and vegetation obscures the majority of coal outcrops of the Hiawatha, Gordon, Castlegate "A", and Bob Wright seams. Only the Hiawatha and Castlegate "A" Seams have been economically mined in the area. The Hiawatha seam marks the base of the Blackhawk Formation. The Castlegate "A" seam overlies the Aberdeen Sandstone. The Aberdeen is a marine sandstone sequence that coarsens upward, and is similar in character to the Star Point Sandstone. The Aberdeen measures over 120 feet at Price Canyon

(Sec. 12, T13S, R9E) and thins to the west. In the vicinity of the Horizon No. 1 Mine and the National Mine (Sec. 17, T13S, R8E), the Aberdeen Sandstone is apparently discontinuous and not easily recognizable on outcrop. The westward pinch-out of the Aberdeen Sandstone is illustrated on the west-east stratigraphic section between drill hole LMC-4 and the Arco measured section near the National Mine as illustrated on Plate 6-3. (6/2/2005)

Acid- and Toxic-forming Materials

Table 6-5 summarizes the quality of the Hiawatha coal seam. The analyses were performed on core samples from drill hole LMC-4 as well as the HZ drill holes. Supporting laboratory data sheets are provided in Appendix 6-2. (6/2/2005)

According to data provided in Table 6-5, the average moisture content of the Hiawatha coal seam is 7.99 percent. The pyritic sulfur content of the coal is low, with a maximum of 0.07 percent and an average of 0.05 percent. (6/2/2005)

Data presented in Appendix 6-2 and summarized in Table 6-6 indicate that the Hiawatha coal seam does not possess toxic-forming characteristics. Boron and selenium concentrations, as well as sodium adsorption ratios, are all within a range classified as "good" by Leatherwood and Duce (1988). However, the acid-base potential of each of the three coal samples, which were collected from the HZ-series drill holes suggest that the coal has a potential to be acid-forming. (6/2/2005)

The acid-forming potential of the coal will be tempered by its slightly alkaline nature (with a pH that varies from 7.3 to 7.8, according to Appendix 6-2). Furthermore, impacts to the environment of the permit and adjacent areas resulting from this acid-forming potential will be minimized by two factors. First, coal will be stored on the surface for only short periods of time before being shipped off site, thus reducing the potential for weathering, oxidation, and generation of acid drainage. Second, runoff from the coal stockpile will be routed through the facility sedimentation pond, where it will mix with more-alkaline runoff from additional areas, thus neutralizing any acidic drainage, which might form. (6/2/2005)

Table 6-6 lists the analytical results of tests performed to determine the acid- and toxic-forming potential of floor and roof samples collected adjacent to the Hiawatha coal seam from LMC-4 and from the HZ holes. Comparing the data in Table 6-6 with the guidelines presented by Leatherwood and Duce (1988) indicates the roof and floor materials should be neither acid-generating nor toxic-forming. One sample (LMC-4 roof material) did contain an anomalous-high pyritic sulfur content of 0.24 percent. However, comparison with other samples collected in the area indicates that this high pyritic sulfur content is likely of limited areal extent. This is further verified by the high neutralization potential of the remaining roof and floor materials (with acid/base potentials varying from 20.3 to 64.0 tons of CaCO_3 per 1000 tons of material). (6/2/2005)

ENVIRONMENTAL RESOURCES INFORMATION

To monitor conditions of the overburden and underburden, samples will be taken at 2,000 ft intervals throughout the mine and will be tested according to the Divisions requirements. (6/2/2005)

Roof and Floor Properties

As discussed in Section 6.5.2, the roof and floor rock of the Castlegate "A" and Hiawatha seams varies from shale to competent sandstone. Information obtained from the LMC drill holes and selected drill holes from the Beaver Creek Coal Company permit application for their mines in the area have been utilized to determine roof and floor conditions that can be anticipated while mining the Hiawatha seam. The location of the of the Beaver Creek drill holes are included on Plate 3-3. Logs of the wells used to determine the properties of the roof and floor rock are included in Appendix 6-1. (6/2/2005)

The logs of drill hole LMC-3 and LMC-4 indicate the floor rock of the Hiawatha consists of five feet of carbonaceous silty shale and silty sandstone overlying the massive sandstone of the Spring Canyon Member of the Star Point Formation. No cores were obtained from LMC-3 and LMC-4 to determine the geotechnical properties of roof or floor rock. Uniaxial strength tests were performed by Beaver Creek Coal Company on samples of shales and sandstones obtained from drill holes GCD-4, 7, and 10. These drill holes are located approximately one mile west-southwest of the Horizon Mine portals. The results of the tests are provided in Table 6-7. (6/2/2005)

The logs from drill hole LMC 1 indicate the roof of the uppermost split of the Castlegate "A" seam is approximately 35 feet of sandstone. The floor of the seam consists of four feet of shale overlying approximately 30 feet of sandstone. In LMC-2, the upper split roof rock consists of 42 feet of carbonaceous shale and the floor consists of 38 feet of shaley silty sandstone. In LMC-3, the upper split roof rock consists of 4.5 feet of shale overlain by 19 feet of silty sandstone and the floor rock consists of four feet of shale overlying 8.5 feet of sandstone. In LMC-4, the roof rock consists of 15 feet of sandstone and the floor rock is five feet of siltstone overlying 26 feet of sandstone. Information from Beaver Creek Coal Company GCD-4 indicates that the roof rock of the Castlegate "A" seam in the area of the drill hole consists of sandstones interbedded with shales and the floor consists of shale. The results of uniaxial strength tests for samples obtained from the roof and floor rock of the Castlegate "A" seam in drill hole GCD-4 is provided in Table 6-7. (6/2/2005)

Drill Holes

The Permittee has provided information from several boreholes on and adjacent to the permit area. Drill holes were drilled by Beaver Creek Coal Company to garner data for coal reserves. Drill Hole logs are provided in Appendix 6-1.

Stratigraphy

The Permittee has described the stratigraphy in Section 6.4 of the MRP. The description includes the area on and adjacent to the mine. The stratigraphy consists of:

Star Point Sandstone

The Star Point Sandstone is the oldest stratigraphic unit exposed in the lease areas. It is the basal unit of the Mesaverde Group and is approximately 440 feet thick. The formation contains the Panther, Storrs, and Spring Canyon Sandstone Members which consist of coarsening upward littoral sequences of white to light gray, fine to medium grained, tight, quartzose sandstone (Blanchard 1981). The Star Point Formation overlies and intertongues with the marine Mancos Shale. The Star Point is the lowest cliff-forming unit over most of the east side of the Wasatch Plateau.

Blackhawk Formation

The Blackhawk Formation measures approximately 900 feet thick in the Gordon Creek area and consists of interbedded fluvial and marine sandstone, siltstone, and shale. The Blackhawk Formation conformably overlies the Star Point Sandstone and the boundary between the two formations is sharp; the massive Spring Canyon Sandstone member of the Star Point Sandstone is overlain by an erodible, shaley sandstone.

In the lease area, the Blackhawk Formation is the principal surficial bedrock unit. The Blackhawk is unconformably overlain by the massive coarse grained, fluvial Castlegate Sandstone. A total of eight coal seams can be identified in the Gordon Creek region. Four of the eight seams are present in the mine area and outcrop on the walls of the North Fork of Gordon Creek Canyon, Coal Canyon, and Bryner Canyon.

Weathering, burning and vegetation obscures the majority of coal outcrops of the Hiawatha, Gordon, Castlegate "A", and Bob Wright seams. Only the Hiawatha and Castlegate "A" seams have been economically mined in the area. The Hiawatha seam marks the base of the Blackhawk Formation. The Castlegate "A" seam overlies the Aberdeen Sandstone. The Aberdeen is a marine sandstone sequence that coarsens upward, and is similar in character to the Star Point Sandstone. The Aberdeen measures over 120 feet at Price Canyon (Sec. 12, T13S, R9E) and thins to the west. In the vicinity of the Horizon No. 1 Mine and the National Mine (Sec. 17, T13S, R8E), the Aberdeen Sandstone is apparently discontinuous and not easily recognizable on outcrop. The westward pinch-out of the Aberdeen Sandstone is illustrated on the west-east stratigraphic section between drill hole LMC-4 and the Arco measured section near the National Mine as illustrated on Plate 6-3.

Castlegate Sandstone

The Castlegate Sandstone is exposed in the central and northeastern portion of the lease block (Plate 6-1). The formation consists of a white to gray, coarse grained to conglomeratic fluvial sandstone. Exposures of the Castlegate Sandstone typically form cliffs to steep slopes. The Castlegate Sandstone is approximately 300 feet thick in the Gordon Creek area.

Price River Formation

ENVIRONMENTAL RESOURCES INFORMATION

The Price River Formation occurs in the northeastern portion of the lease block (Plate 6-1). The Price River is also a fluvial deposit and contains gray to white silty sandstones with interbedded subordinate shale and conglomerate. The formation typically forms ledges and slopes. The Price River formation ranges from 600 to 1,000 feet in thickness.

Unconsolidated Deposits

Unconsolidated deposits composed of silt and fine-grained sand, alluvial sediments and talus debris occur along valley floors and at the base of steep slopes. The thickness of these sediments is variable. In the Horizon No. 1 Mine area, the thickest alluvial deposits occur along Beaver Creek. Based on field observations, the alluvial sediments appear to exceed 10 feet in thickness.

Structure

Figure 6-3 shows data of a dipslope from the top of the Spring Canyon Member of the Star Point Sandstone to the north-northeast. The area around the minesite is dissected by several faults. There are two graben zones, the Gordon Creek Graben and the Fish Creek Graben. These grabens run parallel and converge into N-S trending faults of the North Gordon Fault zone. The proposed mine expansion will take place in the Fish Creek Graben Zone. According to Figure 6-3 any buildup of mine water may flow out the portal.

Several igneous dikes have been reported in area mines including the Beaver Creek Coal Mines #2 and #3. The dikes are reported to be Miocene age and are a mica peridotite (Tingey, 1986). The dikes are typically associated with faults that bisect the area and trend east-west to northwest-southeast.

Faults

The area of the permit is heavily faulted (Plate 6-1). Two major fault zones affect the lease block: the North Gordon and Fish Creek fault zones (Figure 6-2). The North Gordon fault zone measures three miles wide and five miles in length and is located east of the lease. The Fish Creek fault zone averages two miles wide and enters the lease from the northwest.

The permit area contains essentially two major fault trends. They are the N60 degree west trending faults (Range N50-75W) associated with the Fish Creek fault zone, and the N-S trending faults associated with the North Gordon fault zone. Sympathetic faulting also occurs within the mine area. Displacements of the faults in the mine area are variable ranging from a few feet to as much as 200 feet. (6/2/2005)

The PPermittee has not requested that the Division wave in whole or in part the requirements of the borehole information or analysis required of this section.

Findings:

The Permittee has submitted sufficient Geologic Resource Information to meet the minimum requirements if the regulations.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

Sampling and Analysis

The operator is required to perform all sampling and analysis in a manner that meets the requirements of R645-301-723.

The ground-water, surface-water, and point-source discharge site monitoring will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Water Quality for Utah Pollutant Discharge Elimination System (UPDES) permits. A UPDES discharge permit application has been secured from the Division of Environmental Health for the sediment pond and mine water discharge for the Horizon Mine operation. The UPDES permit for the Horizon Mine is provided in Appendix 3-6.

When analysis of any surface water sample indicates non-compliance with the permit conditions, the company will promptly notify the Division and immediately take actions to identify the source of the problem, correct the problem and, if necessary, to provide warning to any person whose health and safety is in imminent danger due to the non-compliance.

Baseline Information

Baseline hydrology was based on the Permittee's review of literature and available data obtained from the USGS, the US Forest Service, the State of Utah, Beaver Creek Coal Company, Blue Blaze Coal Company, and mine permit applications for the surrounding mines. Water quality data have been collected from the permit and adjacent areas since 1989. Water monitoring points are shown on Plate 7-1. Ground-water baseline data are in Appendix 7-2 and surface-water baseline data are in Appendix 7-3. Operational water monitoring data are in the Division's database. (6/2/2005)

Within the permit area, the surface water resources consist of streams, springs, wells and ponds. The mine is established in Portal Canyon, an ephemeral drainage, yielded only occasionally flows until the mine started discharging water. Portal Canyon drains into Jewkes

ENVIRONMENTAL RESOURCES INFORMATION

Creek. The undisturbed runoff generated above the disturbed area is directed into a 36-in culvert, UC-2, that runs the length of the disturbed area in Portal Canyon. Mine water is discharged directly into the Portal Canyon culvert.

Jewkes Creek is a perennial stream which receives its flow from rainfall, snowmelt and springs SP-1 and SP-4. Spring Two Canyon, a tributary to Jewkes Creek occasionally contributes flow. Part of the disturbed area lies along Jewkes Creek. Another set of undisturbed 36-inch drainage culverts, UC-1 and UC-3, directs flows from Jewkes Creek under the disturbed area and under the sedimentation pond. Drainage diversions are shown on Plate 7-4.

Beaver Creek is a perennial stream which lies in a drainage opposite the ridge of Jewkes Creek. Its flow path bisects the federal coal lease. Although the current mine plan does not extend across Beaver Creek, the operator has intentions of conducting future mining operations in the federal coal lease beyond Beaver Creek. The area surrounding Beaver Creek is privately owned. Concerns regarding subsidence and water interception have been expressed by the landowner.

There are several springs in the vicinity of Beaver Creek. Perennial and intermittent springs appear above of the mine area. Springs occur where the recharge potential from alluvium and sandstone units in the Price River Formation and Castlegate Sandstone is high or from fractures created by faulting. Ephemeral springs tend to be linked to shallow aquifers consisting of soils, alluvium or colluvium.

Generally, there is flow in Jewkes Creek and Beaver Creek throughout the year. Several of the adjacent canyons contain flows during the spring snowmelt runoff period and also as a result of isolated summer thunderstorms. Due to the limited drainage area and high elevation of some of the canyons the duration of the snowmelt flow is short and limited to the very early spring. Locations of all baseline water data points are shown on Plate 1. Baseline data information is included in Appendix 7-1.

Plate 7-1 shows numerous springs and seeps exist within, and adjacent to, the permit area, especially in the Beaver and Jump Creek area. Based on results of the PHC determination, base-line study and other available information, the operator will monitor the significant surface water sources, including drainages above and below the disturbed mine site area, and all point-source discharges.

The operator has provided information on water rights included in Appendix 3-5. The points of diversion for water rights near the mine operations are presented on Plate 7-3. Designated uses and season of use for some water rights are not included in the water rights table provided. The operator has indicated that the area is almost exclusively used for stock watering.

Figures 7-2, -2A, and -2B represent the potentiometric surface as it was in December 1995, September 1996, and June 2002. (6/2/2005)

Ground-water information

Seeps, springs and potential mine water discharge will be monitored in accordance with the Ground-water Monitoring Plan in Chapter 7.

Section 6.4.1 discusses site stratigraphy and provides information relative to ground water in relation to the mine operations. Section 7.1.2 discusses the ground-water resources. The operator provides Figure 7-4 to delineate potential recharge areas.

Local Drilling Information and Occurrence of Ground Water

Information regarding baseline ground-water data collection is discussed in Chapter 7, Section 7.1.2.2. Four exploratory holes drilled in 1970's and 1980's were monitored for water in 1995. Drill logs of Holes LMC 1, LMC 2, LMC 3, and LMC 4 are found in Appendix 3A. Also, three wells were drilled and completed in the Star Point Spring Canyon Sandstone in 1995. Documentation of the LMC drilling procedure was provided in a notarized letter from Mr. Joseph A. Harvey to Rich White, Engineering Consultant for Horizon Mine, on March 24, 1992 (Appendix 7-1). Section 6.5.1.1 states that Drill holes LMC-1, LMC-2 and LMC-3 will be plugged and abandoned following State approved methods. [06/02/2005]

Previous Mining History

Plates 3-9 and 3-10 show the location and extent of known workings of active, inactive, or abandoned underground workings, including openings to the surface, within the permit and adjacent areas; also, areas within these mines that have been second mined. [06/02/2005]

Springs

The PAP indicates baseline reconnaissance information was gathered in the field with an Oil, Gas and Mining employee named Darin Worden from 1988 to 1990. Other information was derived from state and federal published open file reports. A complete spring and seep survey in the proposed permit and adjacent area was not conducted. Currently the PAP does not contain a map showing spring locations in the permit and adjacent area.

The baseline sampling information is gathered from springs that issue from the Blackhawk Formation and were characterized as Calcium Bicarbonate type waters.

Table 2.3

Baseline Spring Sampling Summary
(Summary of information from Plate 7-1, Figure 7-3 and Sections 7.1.3, 7.1.5 and 7.2.6)

Sampling Point	Monitoring History	Location (Formation)	Water Quality	Water Quantity	Comments
SP-1 1989 to present	Station #1 1989 through 1993	Issues from Hillside and flows into Jewkes Creek (Blackhawk Sandstone unit above coal seams 8195 ft msl.)	TDS 230-330 mg/l pH 7.5 - 8.5	Late Spring 10-15 gpm High flow on 5/89 was 45 gpm Late Summer/Fall 5 to 6 gpm	
SP-2 1989 to present	Station #2 1989 through 1993 (This description matches the station number 1 previously; Channel in North Fork of Gordon Creek.)	Issues from Hillside and usually flows approximately 100 feet (Blackhawk, 8005 ft msl)	TDS 480-540 mg/l pH 7.5 - 8.5	Flow in Late Spring 1-2.5 gpm Flow in Late Summer/Fall <1 gpm Dry 7/1991, 8/1991, through 12/1992	Spring flows through alluvium below the point of origin.
SP-4 1989 to present	#4 1989 through 1993	Jewkes Creek Drainage flows along road empties into Jewkes Creek (Blackhawk, 8102 ft msl)	TDS 350-480 mg/l pH 7.5 - 8.5	Flow in Late Spring 1-2.25 gpm Flow in Late Summer/Fall <1 gpm	Location not clearly mapped
SP-6 1989 to 1995	#6 1989 to 1995	Upstream from the proposed mine portal (Blackhawk)	N/A	dry from 1989 through 1995	This location is not a spring and will not be included in future monitoring

not found	Gunnison Homestead Spring/Tributary to Beaver Creek near confluence of spring discharge channel and Beaver Creek	(Blackhawk)	not discussed	3-136 gpm the 136 gpm included snowmelt runoff.	Location removed from Figure 7-3
SP-9	Jewkes Spring U.S.G.S. 1979-1983 Station 2-5-W Beaver Creek Coal Company 1985-1995	Near Beaver Creek Channel, south west corner of proposed LOM permit area. (Blackhawk, 8550 ft msl)	TDS 240-300 mg/l pH 7.5 - 8.5	Typical Late Spring flow 20 to 60 gpm decreasing late fall 1.10 to 38 gpm (Maximum flow on 7/85 was 1372 gpm considered inaccurate)	Location mapped on Figure 7-3 Information on flow discussion in Section 7.2.2.2 varies from Section 7.1.2.2

In Section 6.4.2 the operator has identified a series of springs in the North Fork of Gordon Creek in the northwest corner of Section 18 T13S R8 E may be related to faults bisecting the area. The North Fork drainage may have formed subsequent or contemporaneously with the movement along the Gordon Creek Fault Zone.

The operator has stated the Homestead Spring is one of the main contributing springs to Beaver Creek. However, the operator has not included this spring in the baseline or operational monitoring regime. The operator has identified this spring as important to Beaver Creek flows, but has not indicated why the spring should not be part of a sampling point (i.e.; why is this spring considered outside the zone of potential impact?).

Ground-water Quality

Two water quality samples were collected in the Blue Blaze No. 1 Mine workings, one in May 1992 and one in November 1995. The water was determined to be a calcium bicarbonate type with TDS ranging from 414 to 452 mg/l and pH from 6.8 to 7.66.

Ground water collected from the HZ wells in December 1995, November 1996, and January 1996 may have been somewhat affected from the foam drilling fluid used during installation. Data analyses indicate TDS ranged from 380 to 680 mg/l. Due to the potential effects from the foam drilling additional water quality data is necessary.

ENVIRONMENTAL RESOURCES INFORMATION

Surface-water information

The Horizon Mine lies within the headwater streams of the Price River Basin. Major drainages within the permit and adjacent area are; Beaver Creek north of the mine site, and the North Fork of Gordon Creek and Gordon Creek south of the mine site. The disturbed area drains into the North Fork of Gordon Creek. The State Division of Water Quality classifies Gordon Creek as Class 3C and Class 4 waters. These classifications are designated as non-game and aquatic life, and agricultural uses, respectively. Beaver Creek, located over the future proposed mine workings, is classified as 1C and 3A, designated as domestic and agricultural uses respectively. Down stream of the proposed disturbed area in Gordon Creek there are fisheries. Information on the fisheries is lacking in the plan. For further discussions see the **Fish and Wildlife** sections in this TA.

Drainages adjacent to the proposed disturbed area are named for referencing purposes as shown on Plate 7-4. The following designated names are assigned for the drainages flowing through the proposed disturbed area:

- 1) Jewkes Creek - the main drainage through the site which joins the North Fork of Gordon Creek's main stem at the southern boundary of the permit area.
- 2) Portal Canyon - this drainage is the first drainage entering from the west after crossing the permit area boundary and joins Jewkes Creek. The portal entries are located in this drainage.
- 3) Spring Two Canyon - is the second drainage entering from the west after crossing the permit area boundary and joins Jewkes Creek. This drainage is upstream of the disturbed area.

Streams within the permit area receive their maximum flows in late spring and early summer as a result of snowmelt runoff. Flows decrease significantly during the autumn and winter months. Jewkes Creek has experienced no flow during the winter and late summer months.

Beaver Creek is a perennial stream with base flow maintained by seeps and springs. Beaver ponds are common in Beaver Creek and also play a part in providing perennial flows. Springs contributing to base flow include the Gunnison Homestead Spring, within one mile west of the proposed additional lease area, and Jewkes Springs one mile west of the permit area near the north west corner. Discharges from these springs vary between 3 to 136 gpm and 1.1 to 38 gpm respectively.

The USGS maintains a gauging station (09312700) near the mouth of Beaver Creek several miles northeast of the permit area with a period of record from 1960 through 1989. The

minimum annual discharge for this period was 338 acre-feet in 1961. The maximum annual discharge of 1,610 occurred in 1973. The average annual discharge for the 29-year period of record was 3,310 acre-feet. Decreases in downstream flow are observed in Beaver Creek between monitoring stations SS-7 and SS-8. The decrease is most prevalent during the low flow season. This losing stream section may occur due to either alluvium, fracture and fault systems or other unknown factors.

The operator discusses the annual variability of flow in Beaver Creek. Although there is annual variability, the variability in base flow related to snowfall and possibly spring run off would provide more significant information. Snowmelt survey and precipitation information, where available, should be used to compare annual base flow changes with the precipitation rates.

Jewkes Creek drains a watershed area slightly greater than 1 square mile and discharges to the North Fork of Gordon Creek. The operator has referred to this stream as intermittent. The flow data submitted indicate that normally the creek flows all year at Sampling Point 5, but becomes intermittent at Sampling Point 3. The flow diminishes in a downstream direction beyond sampling point SS-5, infiltrates into the alluvium and does not reappear immediately downstream according to information in the PAP. Water may reappear one half mile downstream in the North Fork Gordon Creek where the Mancos shale outcrops. A potential reason for the diminished flows in this area may be due to recharge of subsurface soils in the riparian area near this monitoring site. Characterization, by collecting water quantity data and by observation in the North Fork of Gordon Creek, to determine whether this stream re-emerges as constant flow downstream should be made.

The North Fork of Gordon Creek flows along County Road 290 southeast of the permit area. The elevation of the creek is lower than the Hiawatha coal seam. The operator suggests the mining of the Hiawatha would not affect the quantity or quality of flow in the North Fork of Gordon Creek. However, the operator has shown the Spring Canyon Aquifer below the Hiawatha coal seam contains water and mining might reduce the piezometric water elevation potentially affecting the surface water in this stream. Discharge from the Star Point Sandstone to this stream section should be determined. Losing and gaining reaches in this section of the stream should be identified.

The proposed Five Year Mine Plan as shown on Plate 3-3, illustrates a proposed lease area to the north and east of the currently designated permit area. The surface water descriptions and baseline information for the permits adjacent area have not been presented. The Operator's future mining operations are proposed to take place under Sand Gulch and an unnamed drainage to the north. No baseline information was collected for this area. In addition, Plate 3-3 shows the major fault systems which run northeast and southwest of the proposed mine operations. This fault system should be used to describe the geologically defined adjacent area. The graben and fault system appears to extend all the way up to Jump Creek. Additional baseline

ENVIRONMENTAL RESOURCES INFORMATION

information will be necessary to permit this site in the future and may be necessary to complete the CHIA. Further baseline sampling should focus on the springs and surface waters potentially impacted through intercepting water from faults and fractures and diverting. Baseline information should extend to Jump Creek until adequate information is supplied to the Division to consider Jump Creek outside of the adjacent area.

Table 2.4

Baseline Surface Water Sampling

Sampling Point	Location	Flow	Water Quality	Comments
#3 1993 through 1995	Channel in Jewkes Creek /below disturbed area upstream of the intersection with the North Fork of Gordon Creek and below the surface facilities.	Intermittent	TDS 388 to 799 mg/l. Total Fe <0.02 to 8.7 mg/l Total Mn <0.01 to 0.05 mg/l TSS <1 to 72 mg/l pH 6.25 to 9.5	Information presented in the text does not match the data in appendices
#5 1993 through 1995	Jewkes Creek upstream of disturbed area but downstream of the confluence with Spring Two Canyon.	Perennial	TDS 198 to 550 mg/l. Total Fe .05 to 3.9 mg/l Total Mn 0.05 to 1.0 mg/l TSS 1 to 245 mg/l pH 6.7 to 8.99	Information presented in the text does not match the data in appendices
#6 1991 through present	Right Fork North Fork Gordon Creek In the east Drainage above proposed portals and disturbed area	Ephemeral	Removed from proposed monitoring schedule. Samples were never obtained.	This should be monitored on the same day as sites 3 and 7 when sampling during a precipitation event or snowmelt period

#7 1991 through present	Beaver Creek above pond upstream of the proposed future permit area outside of potential subsidence zone?.	Perennial	TDS 216 to 353 mg/l. Total Fe 0.05 to 5.19 mg/l Total Mn <0.1 to 0.19 mg/l TSS <1 to 297 mg/l pH 6.0 to 8.54	Beaver Creek tends to have a lower TDS than Jewkes Creek.
#8 1991 through present	Beaver Creek station downstream, does not appear to be downstream of potential impact area for future mine plan.(see Plate 3-3 and 7-1).	Perennial	TDS 192 to 357 mg/l. Total Fe <0.02 to 1.3 mg/l Total Mn <0.01 to 0.078 mg/l TSS 4.0 to 52 mg/l pH 6.6 to 8.69	Flows tend to be lower than the upstream Beaver Creek station. Located near the Fault system.
2-2-W	Gordon Creek above confluence of North Fork Gordon Creek below the Hiawatha	Perennial	Not discussed.	Impact more likely to be below confluence because of fracture system.
2-3-W	Beaver Creek	Perennial	Not discussed	Monitored by Beaver Creek Coal. Not found on any map
2-4-W 1982-	Beaver Creek 1 -1/2 mile west of permit area	Perennial	Not discussed	Monitored by Beaver Creek Coal.

The operator has not adequately discussed the variation in the data presented as baseline information. Data presented in the text does not reflect data presented in the appendices.

Baseline Cumulative Impact Area Information

The Utah Division of Oil, Gas, and Mining has prepared a CHIA. The last CHIA for the area was prepared February 23, 2001, then updated September 2004 and again in June 2005. In addition to reference sources cited, information has been garnered from the Horizon, Gordon Creek #2, #7 and #8, and Gordon Creek #3 and #6 Mining and Reclamation Plan (MRP), as well as U. S. Geological Survey and Utah Geological Survey hydrologic and geologic reports.
[06/02/2005 JDS]

Modeling

Actual surface- and ground-water information is supplied in this application; therefore, modeling is not proposed. No surface water modeling has been conducted.

Alternative water source information

In Section 7.1.6 the operator purports no significant impacts are foreseen to ground water as a result of mining in the permit area. In Section 3.4.3, page 3-18, the operator states, "As noted in Section 7.1.6, alternative sources will be developed and provided if water rights or uses are affected by mining operations", however, no discussion on alternative sources were presented in this section. Section 3.4.3 states, "Should Horizon's mining activities cause an adverse impact on the areas water supply, the operator intends to mitigate the effects. The mitigation will be negotiated between Horizon and the injured party".

Because "Alternative Water Source Information" applies to Surface Mining and Reclamation activities under R645-301-727 there are no requirements under this regulation as it applies to underground mining. However, the operator is required to notify the Division of Oil Gas and Mining when analysis of any ground-water or surface-water sample indicates non-compliance with the permit conditions, which include the performance standards under 752.220 through 752.250. The Division of Water Rights and other agencies may also request notification should a water use be disrupted.

Information provided in the PAP indicates the water rights applied for are a leased right and not an acquired right. Therefore, the operator would not be able to replace a right with these sources should diminution or quality of a water right be impacted through mining activities.

In the MRP, Section 3.4.3, the operator should remove the reference to discussions found in Section 7.1.6, regarding replacement of water rights, because there are no such discussions. The operator should cross reference Section 3.4.3, which describes the actions to be taken should loss of a water right use result from mining activities under Section 7.1.6 in order to provide a clear plan. The requirements under R645-301- 731.223 and 731.212 should be addressed. The operator should provide a plan which clarifies who will be notified should it be known that a water resource has been impacted by mining activities

Probable Hydrologic Consequences Determination*Impacts to the Perched Aquifer System*

Small perched aquifers within or adjacent to the mine plan area may be impacted as a result of mining related subsidence (Section 7.3.2 - Determination, Impacts to the Perched Aquifer System). (6/2/2005)

Impacts to the "Regional" Aquifer System

(The term *regional aquifer* is commonly used to describe the saturated portions of the Blackhawk Formation and Star Point Sandstone - and sometimes other strata - in the Book Cliffs and Wasatch Plateau Coal Fields. However, ground-water storage and movement in these areas is typically of a local or intermediate nature and the Division feels there is little or no basis for generally describing these as regional systems.) (6/2/2005)

It is likely that ground water will be discharged from the mine, approximately 300 gpm during average operating periods and exceeding 500 gpm for short periods of time after mining intercepts water-bearing faults (7.3.2 - PHC Determination, Impacts to the Regional Aquifer System). (6/2/2005)

Approximately 25 gpm (41 acre-feet per year) of ground water will be removed with the mined coal based on average moisture content of 7.99 percent in the coal and maximum production of 700,000 tons per year. Dust suppression and similar uses will consume 6 gpm. Data in Appendix 7-9 indicate that the net loss of water by evaporation due to mine ventilation will be approximately 6 gpm (10 acre-feet per year), so the total consumptive loss to the hydrologic system will be 37 gpm (60 acre-feet per year) (7.3.2 - PHC Determination, Impacts to the Regional Aquifer System). (6/2/2005)

The influence of the water-bearing fault extends at least as far north as Beaver Creek, and may extend at least to the northern permit boundary. Mining will depress the aquifer to the maximum depth of the mined entries, and due to the large amount of water being transported by faulting, the potentiometric surface will be depressed in an area much larger than the permit area. The impact to the "regional" aquifer is expected to be temporary and the potentiometric surface will return to pre-mining conditions as soon as pumping ceases (7.3.2 - PHC Determination, Impacts to the Regional Aquifer System). (6/2/2005)

Impacts to the Hydrologic System Resulting From Subsidence

Projected limits of subsidence are shown on Plate 3-3. This map also shows the relationship of the planned mine workings and projected subsidence to the faulted zones bounding the graben. Mining-induced surface fracturing should be very limited (or nonexistent) within the Beaver Creek stream channel area. Appendix 7-13 contains a copy of the US Forest Service study of the impacts of subsidence caused by full-extraction mining beneath Burnout Canyon at the Skyline Mine. Based on the Burnout Canyon study, the Permittee has concluded that with 800 feet of cover or more, with panels oriented perpendicular to the stream, and with full extraction of the coal, some short-term effects can occur to the streams but the stream should revert to pre-mining configuration after three years (7.3.2 - PHC Determination, Impacts to the Hydrologic System Resulting From Subsidence). (6/2/2005)

ENVIRONMENTAL RESOURCES INFORMATION

The Permittee anticipates that subsidence will not significantly affect springs within the permit and adjacent areas, and that, because second mining will occur uniformly across the permit area, the resulting subsidence should also be uniform, minimizing the potential impacts to overlying springs (7.3.2 - PHC Determination, Impacts to the Hydrologic System Resulting From Subsidence). (6/2/2005)

Mining in the area adjacent to the Horizon permit area has not resulted in hydrologic impacts due to subsidence. Without extensive aquifer systems in units that overlie the coal in and adjacent to the permit area, it is anticipated that subsidence should not cause significant surface- or ground-water impacts within the permit or adjacent areas (7.3.2 - PHC Determination, Impacts to the Hydrologic System Resulting From Subsidence). (6/2/2005)

Acid- and Toxic-Forming Material

Operational Monitoring and Identification of Acid- and Toxic-Forming Materials

The operator has not provided a specific discussion for the potential for acid and toxic forming materials under the Probable Hydrologic impacts. However, the operator provided the following in other sections of the plan:

- Disposal of waste rock from partings and splits will be in underground workings. No acid or toxic forming materials are present in the overburden or underburden for samples analyzed (Section 6.5.7.1), suggesting no acid or toxic forming materials will be in the partings. The waste rock will be backfilled and compacted after second mining subsidence occurs and the waste rock will not be saturated, thus, water quality would not be impacted (Section 3.3).
- If underground waste cannot be blended, sold, or gobbled, arrangements will be made to dispose of this material in permitted refuse piles at a nearby mine.
- Noncoal waste rock from initial development will be incorporated as fill in the mine yard (Section 3.3).

Table 6-5 summarizes the quality of the Hiawatha Coal seam. The acid base potential of each of the three coal samples collected from the HZ-series holes indicate the coal has a potential to be acid-forming (Section 6.5.6). Coal will be stored on the surface for short periods and run off from the coal stockpile will be routed through the sedimentation pond where it will mix with run off water that is more alkaline.

Tests for acid and toxic forming materials were conducted on roof and floor samples in LMC-4 and HZ drill holes. One sample contained a high pyritic sulfur content of 0.24 percent.

The operator suggests this pyritic sulfur content is likely of limited areal extent. This information conflicts with the statement in Section 6.5.7.1.

In Section 6.5.6, the operator has presented analysis from a core sample of the coal obtained from the Hiawatha Seam, drill hole LMC-4. The presented analyses has a sulfur content of 0.47% of which 0.04% is pyrite sulfur with marcasite, 0.038% pyrite and 0.002% is marcasite.

All of the coal will not be removed from underground. Much of this coal will be in contact with air and water during the mining operations and may cause a lowering in the pH of those waters. Currently water from the old Blue Blaze No.1 Mine workings are shown to have a pH of 6.8 to 7.66. In general, these are lower than the surrounding area pH values.

Acid forming discharges have been uncommon and are generally not regionally extensive. Should the presence of pyrite in the mine area cause a decreased pH locally the mixing with higher pH waters in the system would result in localized affects due to downstream buffering.

Where material is trucked to permitted refuse piles at a nearby mine, the acid and toxic characteristic of this material should be known at the permitted mine receiving the waste.

Potential Ground-water Impacts

The operator indicates inter basin transfer out of the Price River drainage cannot occur in this region. However, inter basin transfer between Beaver Creek and Gordon Creek could occur. Because the coal seams dip away from the portal entrance, flow is likely to be sumped underground and could be directed toward the fault systems to the northwest, however, the Operators information indicates the Piezometric surface for the Star Point aquifer is to the east southeast. Flow will occur in the direction influenced by the prevailing geologic controls which are not definitively known at this time.

The control of faulting on ground-water flow can be seen by comparing the potentiometric surface map to the geologic structure. The operator indicates that due to low permeability, and due to the plan to avoid mining into faulted zones, in flow to the mine from faulted zones is projected to be minimal (Section 7.1.2.2). Discussions on how the faults will be avoided were not presented.

The operator has concluded that the Hiawatha coal seam will be saturated from the beginning of mining operations. The rate of inflow will depend primarily on whether a faulted zone is encountered that contains ground water in storage or that is in connection with an overlying perched aquifer. Although the possibility of a significant sustained inflow occurring is probably low to moderate, the actual potential impact from intercepting a fracture reservoir and

ENVIRONMENTAL RESOURCES INFORMATION

depleting or intercepting the flow is moderate to high. A resulting loss of head could disrupt stream and spring flows and possibly recharge the fracture zone down dip to the north east or in the direction of regional flow to the east-southeast. Changes in quantity and quality to spring and surface water discharges associated with the faults could be the result.

Waste rock from the mining procedure is proposed to be gobbled underground and backfilled. Because the materials will have an increased surface area due to removal the potential impacts, should water and air come in contact with the materials, would be increased TDS (ions in solution) and potential acid and toxic formation. Data from a recent underground mine water sample from the No. 1 Mine is found in Chapter 7 and may be indicative of some potential water quality changes. See the section above on **Acid and Toxic Forming Materials** in this TA.

Section 3.3.1, Plate 3-3, does not show all known and existing mine workings in the permit and adjacent area. These areas are critical to supporting documentation regarding the Probable Hydrologic Consequences of mining as it might relate to other mines vs. the proposed Horizon Mine. The operator must include this information in the plan for all seams and mining in the permit adjacent area.

The operator states, "It is not anticipated that large quantities of ground water will be encountered throughout the duration of mining". The Division believes the potential for impact increases if water is intercepted by mining through paleochannels associated with fractures, or a water-bearing fault or fracture system is intercepted by mining activities. The potential for impact appears to be highest if fracture associated flows in the Hiawatha Seam are intercepted as occurred in the Beaver Creek Coal Mine.

The operator has estimated the "worst case" potential inflow through a porous formation (exclusive of fracture flows) to be 2.6×10^{-4} and to have an average potential inflow of 1.5×10^{-4} , or a flow rate of 9 and 5 gpm per section. Assuming six sections the total potential inflow would vary between 30 and 54 gpm. This information assumes a worst-case scenario between 270 to 130 feet of head. Therefore, the potential is that a decrease of head in the Star Point Sandstone of between 270 and 130 feet could occur over time. The extent to which this affects the adjacent area is limited to the interaction of the members along the fault zones and determination of discharge areas. The aquifer may be dewatered within the graben with out interaction with the fracture/fault related waters or, may affect the waters associated with the fault system.

Potential Surface Water Impacts

On page 7-22, the operator states that proposed mining operations will occur north of Gordon Creek and should not affect the quantity or quality of water in this drainage. However, it was noted that approximately 400 gpm inflow was produced from the floor when mining the Hiawatha Seam. This information, along with the dewatering estimates discussed above under

the *Potential Ground-water Impacts* of this T.A., indicate there may be a potential to intercept ground-water flow from below the Star Point Sandstone, below the Hiawatha Seam. This flow interception could impact base flow to Gordon Creek, or relocate the source of the flow. Supporting information can be determined by assuming the control point for the piezometric surface would likely be at the elevation related to the dip. With a dip of 5.3% to the northwest an outcrop elevation of approximately 7,600 and a maximum linear distance down dip of 5,000 feet the zone of influence most likely to be impacted below the Hiawatha Seam would be from approximately 7,600 ft to 7,335 ft. This is also within the range of the piezometric surface of 7,500 and is in the general direction of the assumed ground-water flow. Water quantity, water quality, and losing and gaining sections for reach segments should be determined for Gordon Creek above and below this section. A continuous recording flume is recommended for operational monitoring if the characteristic of the stream is determined to be potentially impacted.

The operator indicates the water associated with the Beaver Creek Coal Company No. 3 Mine is believed to be in communication with Beaver Creek and will be avoided when mining the proposed Horizon No. 1 Mine. Avoidance will occur by closely monitoring the activities in the fault area. The operator has not demonstrated why they believe the communication with Beaver Creek exists and has not provided a monitoring plan, which addresses this potential impact.

Subsidence Control and Renewable Resource Protection

The Stream Buffer Zones will be maintained beneath Beaver Creek and the North Fork of Gordon Creek should mining proceed beneath either creek (Section 3.3.2.2).

The proposed stream channel buffer zone is shown on Plates 3-3. Retreat mining will not occur under those areas shown to be within the buffer zone. A discussion on the width of the buffer zone was not found. The operator has stated that mining is designed to preclude subsidence of perennial and intermittent stream reaches. Specifics to the statements regarding these buffer zone areas could not be located. However, comments made by the operator suggest that massive sandstone units make it unlikely that subsidence will reach the surface, and swelling shales in the overburden would have a tendency to heal fractures.

According to the Operators subsidence plan a measurable subsidence effect would include a marked decrease in flow of 30%. In order to determine whether a marked decrease in flow occurred frequent monitoring would be required. The operator should describe how the monitoring plan monitors for this potential impact.

The operator suggests the following reasons indicate potential for damage due to subsidence will be low because no noticeable mining subsidence has occurred in the Gordon

ENVIRONMENTAL RESOURCES INFORMATION

Creek #2 area (mined over 40 years ago) and in the Consumers No. 3 Mine, Section 3.2.3. The following areas were previously mined beneath Beaver Creek

Swisher Coal Company mined under Beaver Creek in the northern most west panel of the Castlegate "A" seam in January 1978. Overburden is approximately 650 ft.

Beaver Creek Coal Company mined under Beaver Creek in the "A" panel in September 1981. Overburden was approximately 425 feet.

Although longwall mining subsidence occurs immediately following mining, room and pillar subsidence may not occur for a long period of time. The proposal to monitor subsidence annually for two years following cessation of mining is probably adequate for determining immediate subsidence response. However, prior to bond release the lack of, or presence of, subsidence should be confirmed.

Statements in the PAP indicate that if significant inflow of ground water occurs mitigation measures may include; attempts to seal the inflow, increased monitoring program, lining the stream bed through an effected area, and replacement of water, should it be indicated through monitoring to be mining related (Section 3.4.8.2). In Section 3.4.8.4, the operator commits to notify the Division in writing and begin implementation of the approved mitigation plan if adverse impacts to Beaver Creek are noted as a result of mining. The operator will be encouraged to complete short-term mitigation measures such as sealing the flow from in the mine. However, Division notification should occur as soon as possible and coordination with concerned parties may be necessary prior to approval of a site-specific mitigation plan.

Water Use

During the early years of the mining, water was pumped from the North Fork of Gordon Creek into the mine for use in dust abatement". Based on the predicted inflow information the operator has estimated approximately 31 acre feet per year will need to be pumped into the mine, while it is estimated that 41 acre feet will be removed with the coal each year. The mine has been producing a significant amount of water, since they encountered the old mine workings of the old Consumer's Mine in 1997. The Horizon mine is discharging about 350 gpm. *Sediment Yield*

The potential for increased suspended solids and sediment loading to Gordon Creek is probably highest during the construction phase of operation and reclamation. The operator has committed to monitor for turbidity of the water upstream and downstream of the site during the construction phases. A criteria for Class 3C allows a turbidity increase of 15 (NTU).

Increases in sediment during the operational period will be minimized through the use of a sedimentation pond and drainage controls. The operator has also committed to store snow in sites that will directly drain to the sedimentation pond (Section 3.3). During the reclamation

period it is not clear whether alternate sediment control measures or sedimentation pond measures will be used.

During the past four years logging activities have taken place in the Beaver Creek area on Stamatakis property. Logging and transport activities have disturbed substantial areas along the roads and riparian areas of Beaver Creek, the North Fork of Gordon Creek and Jewkes Creek. Trees are removed from the property and transported out over the county road which connects to State road 139, the North Fork of Gordon Creek. There have been no Best Management Practices for logging conducted on this logging site. Sediment yield from the logging sites and roads has been substantial. During the summer of 1997 the team conducting a subsidence noticed areas logged down to the Beaver Creek without a protection barrier. Sediments from the logging sites and access road flowed directly into the creek. Trees and branches littered the side of the creek. The dirt road along Beaver Creek was ground to a fine powder, in some places as much as 1 foot deep. The point bars and bottom of Beaver were covered with silt.

Logging continued during the winter months. As roads became muddy the logging company used a graders and bulldozers to excavate the muddy layers which were pushed in mounds above the roads and creeks, where they could easily flush into the creeks (Beaver Creek, a tributary to the North Fork of Gordon Creek and Jewkes Creek. Sediment loading into the creeks will likely continue until logging is completed. Operational monitoring could show significant changes in water quality and aquatic wildlife levels as a result of the logging practices.

Surface Water Quality

Currently coal mining waste may exist near Test Pit No. 8. This waste (potentially 9,718 cubic yards) is proposed to be stockpiled adjacent to the coal stockpile and blended (Section 3.3.2.7). The operator has stated that if acid and toxic materials remain on site they will be buried by 4 feet of cover. Currently water moves through the fill and seeps toward Jewkes Creek. The water quality of this site is likely to be improved with the proposed reclamation measures.

The operator has provide a discussion on potential changes in water quality based on data obtained from the Blue Blaze in mine waters. Based on impacts from other mining operations the potential for increased TDS is likely in the permit area. The operator sites downstream increases in TDS when flowing over Mancos as a factor in considering impact as minimal. Because downstream waters are naturally degraded the use and quality of the upstream waters retains its importance. However, impacts to downstream waters would probably not be notable.

The road to the mine is maintained as a gravel road therefore the use of road salting is not likely to affect water quality.

ENVIRONMENTAL RESOURCES INFORMATION

Hydrocarbons

Loadstar Energy Inc. indicates Diesel fuel, oils, greases, and hydrocarbon products will be stored above-ground and may be spilled in the mine and on the surface during mining operations. An above ground 5,000-gallon diesel fuel tank will be located between the coal stockpile and the truck turn around as indicated on Plate 3-1 (review plate for proximity to surface water). A shop maintenance area will be located next to the mine office area.

The operator proposes the berm surrounding the tank will be adequate to contain the total volume of the tank, in the event water needs to be drained from the berm. The operator indicates spills will be handled in accordance with the Spill Prevention Control and Countermeasure (SPCC) Plan. This plan is provided in draft form without a certified signature in the PAP under Appendix 7-8. Elements of the plan include:

- Visual inspection of all tanks, associated valves piping and containment areas.
- Notification to the Mine Manager and containment of the spill
- Reporting requirements for spills.
- Procedures for preventing spills during filling tanks.
- A copy will be maintained on file in the Mine Manager's Office and the Mine Engineer's office.

The Operator's proposal uses accepted practices for their SPCC plan. The operator should include clean up procedures for small scale spills, commit to retain absorbent materials on site and, should provide either a concrete containment structure with a drain or provide for disposal and sampling of the earth material below the fuel tanks and areas of hydrocarbon use.

The operator can provide additional reasonable operation measures to minimize hydrologic impacts on and off the permit area.

In addition to the discussion on containment of spills, the Permittee has added a statement that there is no intention of abandoning equipment underground. Should it be necessary to abandon any equipment underground, the Permittee commits to drain all petroleum products from the equipment, and show locations of abandoned equipment on a mine map that will be submitted to the Division (7.3.2 - PHC Determination, Potential Hydrocarbon Contamination). (6/2/2005)

Flooding or Streamflow Alteration.

All disturbed-area runoff will flow through the sedimentation pond or other sediment-control device. The sedimentation pond is designed to contain the 10-year, 24-hour storm event (Section 7.2.3.2 - Sedimentation Control Structures and Diversions, Disturbed Area Runoff and Sediment Control). (6/2/2005)

The operator discusses the potential for flooding as being diminished due to the sedimentation pond reducing peak flows. In addition to the Operators comments, it is likely that the water flowing through the culvert will have increased flow velocity over the natural velocities for the same discharge rates. A potential impact includes downstream erosion. The operator has provided riprap channel designs for the velocities than may occur from a 100-year, 6-hour event, which meets the minimum regulatory requirements. Other potentials for streamflow alteration are discussed under Potential Surface-Water Impacts and Potential Ground-water Impacts.

Sediment-control devices are designed to be stable, minimizing the potential for breaches that could cause downstream flooding; sediment is retained on-site, so bottom elevations of stream channels downstream from the disturbed areas are not artificially raised and the hydraulic capacity of the stream channels is not altered; and flow routing through the sediment control devices reduces peak flows from the disturbed areas, precluding flooding impacts to downstream areas. Following reclamation, stream channels will be returned to a stable state, minimizing detrimental effects that may result from flooding (7.3.2 - PHC Determination, Flooding Potential of Downstream Areas). (6/2/2005)

The addition of the discharged mine water is not expected to alter the natural channel and the potential for stream channel alteration is minimal. Maximum discharge is expected to occur only for short periods of time, when water-bearing faults are intercepted. Even the maximum discharge from the mine during the 100-year 6-hour storm event would not cause Jewkes Creek below the mine facilities to exceed its channel capacity (7.3.2 - PHC Determination, Flooding Potential of Downstream Areas). (6/2/2005)

Projected limits of subsidence are shown on Plate 3-3, which also shows the relationship of the planned mine workings and projected subsidence to the faulted zones bounding the graben. If subsidence does occur, the Permittee expects it to be uniform with little to no impact on Beaver Creek or other drainages in the area. The Permittee commits that if sharp drops occur at the faults at the edges of the graben that bounds the mine workings, the impacted sections will be reconstructed to prevent erosion and loss of topsoil. To stop flow being lost into the fault, the channel area would be excavated and backfilled with clay prior to reconstructing the channel. If subsidence fractures occur in Beaver Creek without vertical displacement but flow is lost into the fracture, a mixture of soil and bentonite will be used to seal the fracture. In the event that stream channel mitigation is required, the Permittee commits to submitting designs to the Division for approval prior to commencing any construction activities (7.3.2 - PHC Determination, Flooding Potential of Downstream Areas). (6/2/2005)

Groundwater Monitoring Plan

Seeps and springs in the permit and adjacent areas are shown on Plate 7-1. (6/2/2005)

ENVIRONMENTAL RESOURCES INFORMATION

The mine operators conducted surveys for watercourses, seeps, and springs in the federal lease and surrounding areas. Areas evaluated included Sand Gulch, Coal Canyon, and several unnamed drainages that contribute to Jump Creek. Flow and temperature for each seep or spring are summarized in Appendix 7-2 (Section 7.1.1 - Method of Study). (6/2/2005)

Water levels in the piezometers have been measured quarterly and results are tabulated in Table 7-of the MRP and in the Division's database. (6/2/2005)

Surface-Water Monitoring Plan

Surface water resources and locations from which samples have been collected in the permit and adjacent areas are shown on Plate 7-1. Baseline hydrology was based on review of literature and available data obtained from the USGS, the US Forest Service, the State of Utah, Beaver Creek Coal Company, Blue Blaze Coal Company, and mine permit applications for the surrounding mines. Field reconnaissance was performed to confirm the location and characteristics of surface watercourses, springs, and seeps (Section 7.2.1 - Methodology). (6/2/2005)

Findings:

The operator has submitted sufficient information to address this section.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The affected area, as defined by R645-100-200, includes both the area of actual surface disturbance and the area above the underground mine workings, which might be affected by subsidence resulting from the underground mining operation.

The affected area boundary not only contains the permit boundary but additional subareas where additional permit would be sought. The Permittee did not indicate that they planned to seek additional acreage. On Plate 3-3, the Permittee shows that most of the surrounding area is faulted making a simple expansion unlikely. Therefore, the Division considers the affected area boundary map to be the same as the permit area boundary map. See Plate 1-1, Permit Boundary. (6/2/2005)

The boundary of the disturbed area of the Horizon Coal operation, which includes proposed as well as previous disturbance, is shown on Plate 3-1--Surface Facilities. The boundaries of all areas that are to be newly disturbed by this operation are also shown on Plate 3-6--Premining Topography and Plate 3-7--Post Mining Topography.

Archeological Site Maps

No archeological sites have been identified on Federal Lease UTU-74804 .

Coal Resource and Geologic Information Maps

Figure 6-2 in the text section identifies the general regional geology. There are no coordinates or boundary lines to provide specific reference on the map, however it does give an idea of the relationship between surface stratigraphy and faulted areas. Plate 6-1 provides more detail of the geology and permit area. The map shows a layout for the geologic cross sections, shown in Plate 6-2 (N-S cross section) and 6-3 (E-W cross section). The streams are not shown on Plate 6-1. Figure 6-3 provides information of the regional structure. Generally the structure is to the north-northeast; however, due to the multitude of fault in the area the slope could change in any fault block. (6/2/2005)

Overburden isopach thickness and coal seam thickness are shown on Plate 3-3. Projected limits of subsidence are shown on Plate 3-3, which also shows the relationship of the planned mine workings and projected subsidence to the faulted zones bounding the graben. (6/2/2005)

Additional information on lithologic characteristics for the permit and adjacent areas is shown on geologic cross sections on Plates 6-2 and 6-3. Approximate locations of the boreholes and measured sections used to make these cross sections are shown on small index maps and tabulated in Tables 6-3 and 6-4. [06/02/2005]

Cultural Resource Maps

An evaluation of cultural resources has been conducted and a negative findings is presented in Appendix 5-1 of the MRP. [06/02/2005]

Existing Structures and Facilities Maps

No new structures will be developed above Federal Lease UTU-74804. All surface facilities and structures are described in the MRP.

The term existing structures and facilities is defined as:

“A structure or facility used in connection with or to facilitate coal mining and

ENVIRONMENTAL RESOURCES INFORMATION

reclamation operations for which construction began prior to January 21, 1981.”

The Permittee does not propose to use any existing structures or facilities in connection with the permit boundary expansion. (6/2/2005)

Existing Surface Configuration Maps

Pre-mining, operational and reclamation surface configuration maps are located in the MRP.

Mine Workings Maps

Old mine workings are shown on Plates 3-9 and 3-10. Projected mine workings are on Plate 3-3. There has been no surface mining within the permit and adjacent areas. [06/02/2005]

Monitoring and Sampling Location Maps

The permit application package identifies that the location of all known seeps and springs, as well as watering ponds or tanks are shown on Plate 7-1. There are no lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas. The locations of bore holes are shown on Plate 6-1-Geology and Plate 7-1-Water Monitoring Locations. [06/02/2005]

Permit Area Boundary Maps

The Permittee shows the new and old permit boundaries on Plate 1-1. That plate was certified by a registered professional engineer. Plate 1-1 shows the following:

- The old and new permit boundaries
- The disturbed area boundary
- Township, range and sections
- Topography (80-foot contours)
- Roads and stream. [06/02/2005]

Surface and Subsurface Ownership Maps

The topography of the proposed disturbed area is shown by contours on Plate 3-6--Premining Topography and by profiles on Plate 3-2--Premining and Operational Cross Sections. Plate 3-6 also shows the extent and nature of existing disturbance and all existing manmade structures.

Representatives of the Division visited this site several times in 1991 and 1992, in connection with the Division's review of the original Blue Blaze proposal, in order to observe the

site and check the accuracy and completeness of the maps, which are identical to the maps found in the present plan. The Division found that the maps cited in this section--Plate 3-6--Premining Topography and Plate 3-2--Premining and Operational Cross Sections--accurately show the existing surface configuration of the proposed disturbed area, as defined in this section, and thus fulfill the requirements of this section.

Surface Water Resource Maps

The aquifers associated with the Castlegate "A" and Hiawatha Seams were determined to be discontinuous over the area to be mined and therefore have not been mapped.

Potentiometric surface maps on Figures 7-2, 7-2A, and 7-2B show seasonal and longer-term variations in the potentiometric surface for water in the Star Point Sandstone. (6/2/2005)

Surface and Subsurface Manmade Features Maps

All surface and subsurface manmade features within and adjacent to the permit area are shown on Plate 3-1- Surface Facilities and Plate 1-1- Permit Boundary. There are no major electric transmission lines, pipelines, agricultural drainage tile fields, or occupied buildings in or within 1,000 feet of the permit area.

Land Use is shown on Plate 4-1. Present owners of record of surface lands are shown on Plate 4-2, and Coal Ownership is shown on Plate 4-3. [06/02/2005]

Vegetation Reference Area Maps

Well Maps

Plate 6-1 identifies the wells and drill holes on and adjacent to the permit area. There are no gas or oil wells within, and no water wells within or adjacent to, the proposed permit area, as shown by Plate 3-1--Surface Facilities and Plate 1-1--Permit Boundary. These maps, as stated above, show all surface and subsurface manmade features within and adjacent to the permit area. Three water-monitoring wells were drilled in the area, IPA #1, IPA #2 and IPA #3, to monitor mine water levels. These wells are shown on Plate 7-1. (6/2/2005)

Findings:

The Permittee has submitted sufficient Maps, Plans and Cross Section information to meet the minimum requirements if the regulations. (6/2/2005)

OPERATION PLAN

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Type and Method of Mining Operations

Analysis:

The Permittee proposes to do all mining with room-and-pillar mining methods. First mining only will be done to protect all entries, mains and no subsidence areas. Second mining will be done to maximize coal recovery when possible. [06/02/2005]

Findings:

The requirements of this section of the regulations are considered adequate in regard to the proposed permit changes for the addition of the permit boundary to include part of the federal coal lease UTU-74804.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

Existing structure means a structure or facility used in connection with or to facilitate coal mining and reclamation operations for which construction began prior to January 21, 1981. There are no existing structures involved with the permit boundary expansion. (6/2/2005)

Findings:

Sufficient information has been submitted to address this section.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR 784.17; R645-301-411.

Analysis:

OPERATION PLAN

No public parks or historic places will be impacted as a result of adding Federal Lease UTU-74804 to the permit area.

Findings:

The Permittee has submitted information in the previous permit application to address this section.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

No new roads will be developed or relocated in relation to developing Federal Lease UTU-74804

Findings:

Sufficient material has been submitted to make a determination on this matter.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

Analysis:

Chapter 3 Section 3.4.7 of the current operation and reclamation provides for the protection of air quality. Because there is no surface disturbance associated with Federal Lease UTU-74804, the current air pollution control plan is adequate. [06/02/2005]

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

OPERATION PLAN

Analysis:

Because the Permittee proposed to add a federal coal lease to the permit area they must get approval for the coal recovery plan from the BLM. The BLM has approved the R2P2 (resource recovery and protection plan) for the additional lease area. The Division relies on the findings in the R2P2 when evaluating the coal recovery plan. The Permittee requirements of this section have been addressed within the approved mining and reclamation plan, Chapter 5. (6/2/2005)

Findings:

The Permittee has submitted sufficient Coal Recovery information to meet the minimum requirements if the regulations. (6/2/2005)

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:**Renewable Resources Survey**

Hydrologic and vegetative renewable resources are the in the permit boundary. Seeps and springs also exist in the permit area. Beaver Creek is the only perennial stream near the permit area. [06/02/2005]

Subsidence Control Plan

The subsidence control plan must contain the following:

- *A description of the method of coal removal, including the size, sequence, and timing for the development of underground workings.* The Permittee commits to conduct all mining operations using room-and-pillar methods. When possible the Permittee will extract pillars as part of retreat mining. The size, sequence and timing for the Horizon Mine were shown on Plate 3-3. (6/2/2005)

A map of underground workings which describes the location and extent of areas in which planned-subsidence mining methods will be used and which included all areas where measures would be taken to prevent or minimize subsidence and subsidence related damage and where appropriate, to correct subsidence-related material damage. The Permittee shows the subsidence area on Plate 3-3. The Permittee shows the subsidence zone based on two different angels of draw. The first angle was 35-degree and the second was 22.5 degree. Dunrud considered it the maximum angle of draw in the U.S. The 22.5-degree angle of draw is based on subsidence studies from local mines. (6/2/2005)

The only subsidence protection addressed in the amendment was for Beaver Creek. The

OPERATION PLAN

Permittee stated they will protect Beaver Creek by orienting the panels perpendicular to the stream and use full extraction mining. This layout is similar to that of Burnout Canyon at the Skyline Mine. Results from the Burnout Creek study suggest that subsidence will not have a significant impact on Beaver Creek. (6/2/2005)

The Permittee shows in Section 3.4.8.4 the equations that they used to calculate that the maximum subsidence amount would be 2.3 feet. Also see Figure 3-5. (6/2/2005)

The Permittee will not take specific actions to prevent subsidence damage to roads. The roads in the area are dirt. Should subsidence damage the roads the Permittee commits to repair the roads. (6/2/2005)

- *A description of the physical conditions, such as depth of cover, seam thickness, and lithology, which affect the likelihood or extent of subsidence and subsidence-related damage.* The Division addressed those requirements in the geology sections of the TA. (6/2/2005)
- *A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage.* The Permittee describes the monitoring program in Section 3.4.8.5 of the MRP. The plan called for placing survey monuments inside and outside the subsidence zone. The Permittee committed to take readings at each station once a year until two years after cessation of mining operations. (6/2/2005)

The survey monuments and monitoring points are shown on Plate 3-3. The Permittee committed to: 1) install enough station so that at least one station will be subsided every year, 2) establish a draw line on panels 2nd Right 1st North, 3rd Right 1st North or 4th Right 1st North (the information from the subsided draw line will be used to establish a local angle of draw) and 3) conduct a land survey over each panel no sooner than six months after the panel was mined out but no more than 1 year especially in critical areas such as areas of maximum tension and compression. (6/2/2005)

The Permittee also included monitoring points for Beaver Creek and the seeps and springs in the area. Those monitoring points are needed to determine if subsidence caused damage to water rights. (6/2/2005)

- *A description of monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage.* The Permittee does not propose any additional monitoring methods. (6/2/2005)
- *Except for those areas where planned subsidence is projected to be used, a detailed description of the subsidence control measures that will be taken to prevent or minimize subsidence and subsidence-related damage, including, but not limited to: backstowing or backfilling of voids; leaving support pillars of coal; leaving areas in which no coal is removed, including a description of the overlying area to be protected by leaving the coal in place; and taking measures on the surface to prevent material damage or lessening of the value or reasonably*

OPERATION PLAN

April 10, 2008

foreseeable use of the surface. The Permittee shows the areas where subsidence would occur on Plate 3-3. (6/2/2005)

- *A description of the anticipated effects of planned subsidence, if any.* The Permittee states in Section 3.2 that they do not anticipate any damage to Beaver Creek because of subsidence. (6/2/2005)
- *A description of the measures to be taken to mitigate or remedy any subsidence-related material damage to, or diminution in value or reasonably foreseeable use of the land, or structures or facilities to the extent required under State law.* (6/2/2005)

In Section 3.4.8.2 of the MRP, the Permittee addressed two types of subsidence mitigation. For surface cracks and depressions, they committed to filling in fractures. For damage to larger areas the Permittee committed to grade and planting the areas and intensify monitoring. (6/2/2005)

In Section 3.4.8.2, Renewable Resources, the Permittee states that water replacement was addressed in Section 7.1.6. In that section the Permittee committed to replace State appropriated water rights as follows:

Specific methods to promptly replace a water supply impacted by mining operations would include (but not limited to): repair or replacing a pond damaged by mining operations, hauling water by truck to replace water impacted by mining operations, drilling a new water well or transfer of water rights to the damaged party. (6/2/2005)

The Permittee's water-replacement commitments address elements of both R645-301-731.530 and R645-301-525.480, but the Permittee's commitments to replace water supplies and the methods described to carry out such replacement are sufficient to meet the requirements of the Coal Mining Rules. (6/2/2005)

The Permittee talks about ground-water loses that could occur if water entered the mine. The remediation methods include sealing underground cracks, lining the streambed and additional monitoring. The Permittee also commits to replace water after mining is completed. (6/2/2005)

Other information specified by the Division as necessary to demonstrate that the operation will be conducted in accordance with the performance standards for subsidence control. The Permittee commits to remediation for subsidence damage any the roads. (6/2/2005 WHW)

Performance Standards For Subsidence Control

The Permittee must maintain the subsidence performance standards. (6/2/2005)

Notification

In the amendment, the Permittee removed the commitment to notify property owners six months prior to undermining their property. R645-301- 525.700 requires the Permittee to notify at least six months prior to mining the water conservancy district, if any, in which the mine is located and to all owners and occupants of surface property and structures above the underground workings. The notification will include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the operator's subsidence control plan may be examined. The Permittee does not have to have that commitment in the MRP. However, they are required to observe that regulation. (6/2/2005)

Findings:

Information provided in the amendment is considered adequate to meet the requirements of this section.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

Federal Lease UTU-74804 extends the underground operations. There is no change to the approved reclamation plans.

Findings:

The Permittee has submitted sufficient information to address this section.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and Enhancement Plan

A description of the wildlife mitigation and management plan is located in Section 10.5 of the current operation and reclamation plan. Potential impacts from mining would be best characterized as habitat loss. Because there will be no surface disturbance the only potential impact would be habitat

OPERATION PLAN

loss resulting from subsidence. The 2000 raptor survey provided by the Permittee shows the existence of one active Kestrel nest, one inactive Golden Eagle nest and one Golden Eagle old/dilapidated nest. Plate 10-1 also identifies two unoccupied Golden Eagle nests. The Permittee has proposed to verify the status of the identified raptor nests prior to full pillar extraction being completed within 500' of an active nest. Should a nest be active, mining practices will provide for a 200' barrier around the nest location. A 100' barrier will be provided around inactive nest locations. Nests lost or damaged due to subsidence or other mine related causes will be replaced under the guidelines and assistance from The Division of Wildlife Resources. The current plan, (Chapter 10, plate 10-1), identifies the proposed lease area as critical summer habitat for deer and elk. The 2001 raptor survey included in the application does not show the existence of any raptor nests in the proposed lease area. However the portion of Beaver Creek and associated riparian areas that extends through the proposed lease area from Southwest to Northeast would be considered high value and or crucial habitats as well as any springs in the area. The application indicates that these areas will be mined under and uniformly subsided. Hidden Splendor Resources has committed to developing a protection and enhancement plan in conjunction with the Division of Wildlife Resources and the Division of Oil Gas and Mining prior to any secondary or retreat mining under Beaver Creek, page 10-40. The Protection and Enhancement plan for these habitat areas that may be impacted by subsidence should include the following criteria for inclusion in the plan:

- A monitoring schedule for the macroinvertebrates in Beaver Creek,
 - Color infrared aerial photo monitoring of the riparian and meadow areas associated with Beaver Creek once every three years,
 - Channel characteristics, Cross Sections, Longitudinal profiles, and
 - Riparian Surveys as described in the Skyline Mine Subsidence Study. The plan should be developed in cooperation with the Division of Wildlife Resources and the Division of Oil, Gas and Mining.
- (6/2/2005)

Endangered and Threatened Species

The list of threatened, endangered and candidate species that may occur within the proposed lease area are the Bald Eagle, Black-Footed Ferret, Bonytail Chub, Colorado Pike Minnow, Humpback Chub, and Razorback Sucker. They are listed in table 10-1 of Chapter 10 of the current operation and reclamation plan. The text on page 10-25 and table 10-1 has been updated to reflect the current status of Threatened, Endangered and Candidate species. Most threatened or endangered species that could occur in Carbon County occur at lower elevations than the mine and have no habitat in the proposed permit area expansion. There have been no confirmed sightings of Black-Footed Ferrets in Carbon County in several years. However, the mine has potential, through water depletions, of adversely affecting four listed threatened and endangered fish species of the upper Colorado River drainage. The Fish and Wildlife Service requires mitigation when water depletions exceed 100 acre-feet annually. Chapter 7, Section 7.3.2 (PHC Determination), provides for the criteria and volumes used to calculate an estimate of 60 acre-feet of water per year. (6/2/2005)

Bald and Golden Eagles

Bald eagles are common in the area during the winter and could occasionally fly through or roost in the proposed addition to the permit area. Mining would have negligible effects on these birds.

OPERATION PLAN

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

Beaver Creek and several springs and ponds are adjacent to or lie within the proposed permit area revision. The Permittee is currently monitoring Beaver Creek and certain springs, and wells in the proposed addition to the permit area (plate 7-1). The Permittee has proposed to maintain a 100' Buffer zone along Beaver Creek to prevent impacts to the stream. Subsidence monitoring points are identified on plate 3-3. The portion of Beaver Creek and associated riparian areas that extend through the proposed lease area from Southwest to Northeast would be considered high value and or crucial habitats as well as any springs in the area. The application indicates that these areas will be mined under and may be subsided. Therefore the application needs to include a Protection and Enhancement plan for these habitat areas in the event they are impacted by subsidence. Suggested criteria are noted in the Protection and Enhancement Plan section of this document. (6/2/2005)

Findings:

The information contained in this section of the application is adequate to meet the requirements of the regulations.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Plate 3-1 shows the planned surface facilities. Section 3.5.2 states that during any future disturbance, topsoil will be stockpiled, contoured, fertilized and vegetated with seed mix #1 (Table 3-2). The piles will be protected with markers and berms or strawbales. And (Section 3.4.4) that disturbed soils will be carefully handled for use as substitute topsoil materials.

Topsoil Removal and Storage

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

The Permittee met the minimum requirements of this section. The Permittee classified all roads within the disturbed area boundary as primary.

Plans and Drawings

The Permittee met the minimum requirements of this section. The Permittee provided the Division with updated maps of the disturbed area that showed the location of the paved roads and parking lot

Primary Road Certification

The Permittee submitted Plates 3-1 and Plate 3-4, however neither one were properly certified by a registered professional engineer. The Division will approve the amendment on the condition that the clean copies contain certified maps.

Other Transportation Facilities

Findings:

The information provided in the proposed amendment is considered adequate. Conditional approval is granted pending submittal of signed copies of Plates 3-1 and 3-4 before April 30, 2008.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

Section 3.2.3 *Surface Facilities* indicates that there will be no disposal of non-coal waste on site other than rock type construction materials. And further that the disposal of rock-type construction materials will be disposed of in underground workings within the Horizon Mine, not on the surface. Garbage will be hauled to the state-approved landfill (Section 3.2.3.8).

Coal Mine Waste

Section 3.2.3.100 states that no coal mine waste disposal facilities will exist on the surface in the permit area. Section 3.2.600 indicates that coal mine waste will be handled as outlined in this section and previously in this MRP. Section 3.2.3 *Surface Facilities*. Indicates that underground development waste will be disposed of underground with the Horizon Mine. If waste is brought to the surface, a permanent stockpile will be permitted.

Section 3.3.2.5 states that approximately 2,500 CY of coal mine waste was buried in the facilities pad during construction. Appendix 3-8 contains a plate showing approximate locations of buried coal mine waste.

There is no intention of abandoning equipment underground. Should it be necessary to abandon any equipment underground, the Permittee commits to drain all petroleum products from the equipment, and show locations of abandoned equipment on a mine map that will be submitted to the Division (7.3.2 - PHC Determination, Potential Hydrocarbon Contamination). [06/02/2005]

Refuse Piles

Section 3.2.3.500 no refuse piles will exist in the permit area. Section 3.2.600 *Coal Mine Waste* indicates that underground development waste will be disposed of underground in a dry state. The acid-toxic nature of the material is discussed in Chapter 6.

Plate 3-1 shows the location of the sediment pond and ditch clean out material (behind the substation and behind the fan). The designated areas can hold 260 CY. The material may be sampled for use as substitute topsoil or fill material.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

Steve and Pete Stamitakis stated in their letter to the Division that monitoring had not been done "since Horizon left"; it isn't clear what date or event this refers to, but some of the monitoring was not done in 2000. There have also been quarters when there was no access for some monitoring sites because of snow cover. Data in the Division's database indicate that the monitoring plan described in the MRP has basically been followed and reporting to the Division is up-to-date. (6/2/2005)

The Permittee has committed to monitor significant surface- and ground-water sources, including drainages above and below the disturbed mine site area, and all point-source discharges. (6/2/2005)

Soils at the site tend to be silty clay loam to loam within the Shupert-Winetti Complex and gravelly loam to loam within the Brycan, Rabbitex, Senchert and Curecanti Series. The SCS information the use of hydrologic groups B and C (undisturbed soils) are considered adequate. In cases where the soil phases were in group B or C the operator used group B.

The operator has used a CN of 89 for the undisturbed areas. This number is adequate at this time. However, should the operator propose additional buildings, road surfacing or pad surfacing the design CN would require re-analysis. The operator used a CN of 70 for the additional areas draining to the pond considered "undisturbed" by the operator. Some of these areas are disturbed from previous mining operations.

Groundwater Monitoring

The Ground-water Monitoring Plan is in Section 7.1.5. Operational and reclamation ground-water monitoring parameters are in Table 7-2. Ground-water monitoring during operation of the mine will be conducted in accordance with R645-301-723. (6/2/2005)

Water levels in the piezometers have been measured quarterly; results are tabulated in Table 7-1 of the MRP and are in the Division's database. (6/2/2005)

OPERATION PLAN

The operator committed to submit quarterly and annual reports. The operator includes a commitment to notify the Division if data indicate non-compliance with permit conditions.

The operator has stated that springs monitoring data will provide information or impacts to localized perched aquifers within the Blackhawk Formation. It is established that these aquifers are associated with fault systems. Similar information will be obtained by monitoring inflows. The HZ monitoring wells will assist in evaluation potential losses of ground water from the Blackhawk and Star Point formations.

Environmental Resource Description, Hydrology

Specifics in monitoring during the construction period were included and the operator has committed to collect weekly samples during the operational and reclamation construction period up stream and downstream of construction. The parameter is to be analyzed in the field is turbidity. [06/02/2005]

Surface Water Monitoring

Surface-water quality data have been collected from the permit and adjacent areas since 1989. Table 7-5 lists the operational and reclamation surface water monitoring parameters. The baseline data collected from the monitored sites, together with tables outlining the parameters that have been monitored, are presented in Appendix 7-3. Data are also in the Division's database. (6/2/2005)

Discharges of water from this operation will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U. S. Environmental Protection Agency set forth in 40 CFR Part 434. See Sections 731 and 742.

Acid- and Toxic-Forming Materials and Underground Development Waste

Drainage from acid- and toxic-forming materials and underground development waste into surface water and ground water will be avoided by implementation of a Spill Prevention Control and Countermeasure (SPCC) Plan and by the following:

Potentially acid- or toxic-forming materials will be identified by use of Material Safety Data Sheets (MSDS), or by direct sampling and analysis in the case of underground development waste.

The operator has indicated that overburden and underburden samples will be gathered at 2,000-ft intervals throughout the mine and tested according to the Division requirements (Section 6.5.7.1). The Division understands this statement to mean the operator will test the materials according to current Division guidelines for acid and toxic forming materials. See further discussions under **Acid and Toxic** headings of this T.A.

Any material which exhibits acid- or toxic-forming characteristics will be properly stored, protected from runoff, removed to an approved disposal site or buried on site beneath a minimum of 4' of non-acid, non-toxic material.

OPERATION PLAN

Storage of potentially acid- or toxic-forming materials, such as fuel, oils, solvents and non-coal waste will be in a controlled manner, designed to contain spillage and prevent runoff to surface or ground-water resources.

All oils and solvents will be stored in proper containers within enclosed structures. Fuels will be stored in appropriate tanks, enclosed within concrete or earthen bermed areas designed to contain any spillage.

Non-coal waste (garbage) will be stored in a designated location, in dumpsters, and removed to an approved landfill (East Carbon Development Contractors - ECDC) on a regular, as-needed basis.

Transfer of Wells

There are presently three monitoring wells on this permit. When these wells are no longer required, they will be sealed in a safe, environmentally sound manner in accordance with regulations.

Discharges Into An Underground Mine

There are no plans to discharge any water into an underground mine.

Gravity Discharges From Underground Mines

Based on historical data from other mines in the area, some mine water can be expected to be encountered during the mining operation. Typically, such water is stored in "sumps" or designated areas in the mine and used for mining operations or discharged to the surface.

Water-Quality Standards And Effluent Limitations

Any discharge will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the U.S. Environmental Protection Agency set forth in 40 CFR Part 434.

A copy of the UPDES general discharge permit UTG 040019 is in Appendix 3-6. Temporary mine discharge quantities will be reported monthly and submitted to the Division with quarterly monitoring data. Reports will contain the period of pumping and the daily flow rate - unless flow is continuous. A continuous flow meter was installed in 2001 and has been used to report mine discharge since that time (Section 7.1.5). (6/2/2005)

Two sites are identified under the permit, outfall 001, minewater discharge from the sedimentation pond to Jewkes Creek and 002, mine discharge outfall to Jewkes Creek, which indicates the Department of Environmental Quality (DEQ) accepted the use of sumps for treatment of minewater.

With the minewater being directly discharged to the bypass culvert. It will be difficult to determine the visual permitting requirements, as the discharge will mix with Jewkes Creek water before exiting the bypass culvert. Additional monitoring requirements required by the Division included: 1)

OPERATION PLAN

collecting quarterly monitoring data from locations upstream and downstream from the disturbed area within a reasonable time on the same day, the minewater discharge sample is obtained, and 2) monitoring for the monthly maximum discharge flow rate as well as providing in-mine water consumption estimates.

The operator included a commitment to monitor discharge 002 on the same day during the quarterly sampling of surface water sites SS-3 and SS-5 according to the monthly UPDES discharge permit to meet the Divisions Requirement. The maximum flow for the discharge point each month required by the UPDES permit.

Information on mine consumption was provided as an estimate for full production. Information providing an estimate of use for each month during production was what was intended by the requirement to get a better idea on total minewater inflow. The monthly estimates can be incorporated during future mine plan amendment changes.

Diversions: General

Undisturbed

All diversions will be constructed and maintained to comply with the requirements of R645-301-742.100 and R645-301-742.300. Details are described under those respective sections of this chapter.

Culvert details are provided in Chapter 7. Undisturbed area culvert UC-1 will receive bypass drainage from culverts UC-2 and UC-3, Portal Canyon and Jewkes Creek. The culverts are designed to pass the peak flow resulting from the 100 yr.- 6 hr. precipitation event. Calculations supporting these designs are presented in Appendix 7-4. The combined discharge for the two drainages that will be passed through UC-1 is 27.9 cfs. The 100 yr.-6 hr. peak flow to reach UC-2 is calculated to be 8.3 cfs, and the peak flow calculated at UC-2 is 19.6 cfs. Culverts

Calculations indicate that the flow capacity of the unaltered Jewkes Creek is 27.7 cfs above culvert UC-3 and 38.7 cfs below UC-1. The design capacities of the two culverts are 69.5 cfs and 100 cfs, respectively. The capacities of the culverts exceed the expected high capacity of Jewkes Creek. Culvert capacity for UC-2 is calculated to be 83 cfs. This capacity exceeds the Portal Canyon capacity of 13.1 cfs above the culvert in its unaltered state.

A trash rack has been installed on culvert UC-2. A generalized drawing of the trash rack is shown in Figure 7-8. There is no mention of a trash rack installed on UC-2 and no mention of a face protection at the culvert inlet. These culverts are temporary and will be removed during the reclamation phase.

All undisturbed and disturbed diversions are designed to carry the flow from a 10-year, 6-hour event. Culverts UC-4 and UC-5 receive drainage coming from the Jewkes Creek, an intermittent stream, designed to carry the flow from a 100-year, 6-hour event. The operator provided culvert sizes that may carry greater flows than the designed flow for the 10-year, 6-hour event.

Disturbed area diversions are designed to handle the 10-year, 6-hour event. The operator has provided a general channel configuration in Figure 7-7. The operator has stated that channel

OPERATION PLAN

configuration may vary but the minimum cross sectional area will remain the same. The operator has met minimum design requirements. [06/02/2005)

Disturbed

There are five diversion ditches that collect the disturbed area runoff. Most disturbed area runoff will be directed to the sedimentation pond. Only two small areas at the upper end of the disturbed area will use alternative sediment control. Disturbed area culverts are used in conjunction with diversions to convey runoff beneath roadways and to the lower minepad. [06/02/2005)

Drainages are developed by the operator to route undisturbed drainage around the site channels. Drainages with slopes up to 0.5 ft/ft have failed when riprapped. Riprap design procedures were not based on slopes of this steepness. Adequate grading, fill and angular riprap and filter blanket designs are necessary. The operator has provided sizing for graded riprap but no filter blanket designs. It is the opinion of the Division that the operator has not minimized potential impacts to the adjacent area and undisturbed drainage slopes should be reduced where possible.

The proposed topsoil pile directs drainage from DD-3 to DC-2 into the sedimentation pond. No drainage designs specific to road drainage could be located.

Stream Buffer Zones

The operator has submitted a stream alteration permit to the Division of Water Rights. The submittal proposes a 3 foot and 2 foot culvert respectively in Jewkes and Portal Canyon. Comments on the proposal were due by May 19, 1996.

There will be no surface mining activity in the Beaver Creek watershed, so no stream buffer zone is needed along Beaver Creek to protect structures from surface activity. No diversion of Beaver Creek or other streams to the north is planned. Mining is planned beneath Beaver Creek, a perennial stream. (6/2/2005)

Subsidence protection is planned for Beaver Creek by orienting the panels perpendicular to the stream and using full extraction pillaring (3.2 - Surface Facilities Construction Plans, Subsidence Protection). Retreat mining results in uniform downwarping and lowering of strata, generally not accompanied by a significant degree of fracturing, and the original attitude and integrity of the strata are maintained. Little impact on the perched aquifers of the overburden is expected to result from downwarping (7.3.2 - PHC Determination, Impacts to the Perched Aquifer System). (6/2/2005)

Overburden isopach and coal seam thickness are shown on Plate 3-3. Table 6-2 lists depths to the top of the Hiawatha Seam as measured in five bore holes. Plate 3-3 and the cross section on Plate 6-2 indicate a thickness greater than 800 feet. Appendix 7-13 contains a copy of the US Forest Service study of the impacts of subsidence caused by full extraction mining beneath Burnout Canyon at the Skyline Mine. The conclusions from Burnout Creek, which relate to overburden being over 800 feet thick, have been used to predict that subsidence will cause only minor and temporary impacts to Beaver Creek (7.3.2 - PHC Determination, Impacts to the Hydrologic System Resulting From Subsidence). (6/2/2005)

No surface structures exist within the zone of potential subsidence (Section 3.3.2.2). There are, however, private unpaved roads adjacent to Beaver Creek, in Sand Gulch, and in an unnamed side canyon to Jump Creek that could be affected by subsidence. Subsidence of roads is allowed by the Coal Mining Rules, but it is reasonably foreseeable that damage to these roads from subsidence could result in diminished use. Section 3.2.3.4 discusses potential damage to these roads and includes a commitment to maintain and repair these roads. (6/2/2005)

Sediment Control Measures

Horizon Coal Company has committed to limit construction to periods when the stream is not flowing to the extent possible. The proposed measures for culvert construction are acceptable practices. Appendix 3.3 indicates the road will be sloped toward the disturbed drainage ditches. [06/02/2005]

Ditch UD-2 receives extensive drainage from cut slopes as shown in Plate 3-7A, cross sections E, F, and G. These slopes are steep and can be significant sources of sediment. The operator has committed to provide erosion control matting and seeding according to Table 3-2, for all cut slopes which will drain directly to an undisturbed area diversion. As presented in Section 3.3.5.3 mulching and roughening will occur on areas before seeding where slopes are 2½:1 or less. The matting will be applied on slopes 2½:1 or steeper. It should be noted that where competent bedrock is exposed matting might not be practicable.

Currently this road is located on the east side of the stream and outside the permit area, and therefore is a potential source of additional sediment to the stream flow. The fan portal road is to be considered an ancillary road and will be cut into native materials without an engineered surface.

The topsoil is also proposed to be vegetated with interim cover as discussed in Sections 3.4.4.1, page 3-19 and Section 3.5.2. The piles will be contoured, fertilized and seeded. A berm will be placed around each topsoil pile to minimize soil transport. Prior to achieving adequate vegetation establishment other measures are necessary to control erosion.

Siltation Structures: General

Sediment ponds and all other treatment facilities are defined as siltation structures. The two siltation structures at this site include Sweets Pond, a pond developed for water rights use, and the sedimentation pond. For a discussion of the mine site sedimentation pond, see the **Sedimentation Ponds** heading below.

Sweets Pond currently is associated with the Gordon Creek Mines 2, 7, and 8. This site would be double permitted until Gordon Creek has obtained bond release. Because this is an impoundment to be associated with the Horizon Mine appropriate regulatory requirements must be addressed.

Sweets Pond also has an existing pumphouse and a water gate to control inlet flows. The operator has proposed to build a water line from the pond to the mine. This should be included in the

OPERATION PLAN

April 10, 2008

permit area as part of the disturbed area. The pond itself need not be part of the permit area for which bonding is required as described under the "Disturbed Area" and "Permit Area" definition in R645-100, as long as the structures are constructed and maintained in accordance with R645-301 and R645-302.

Siltation Structures: Sedimentation Ponds

There will be only one sediment pond. The sediment pond will be a non-MSHA structure. The sediment pond will be inspected during and after construction by a qualified, registered, professional engineer. The pond will be inspected after each storm and cleaned as necessary. Its embankments will be vegetated, to control erosion, with a temporary seed mix as described in Section 3.5.5.2.

The operator has analyzed the pond embankment designs for stability. Using a standard, circular failure model and the Hoeck Circular Failure Charts, the operator has found that the pond embankments have a static safety factor of 4.81 for dry conditions and 4.44 for saturated conditions (Appendix 3).

The operator proposes to divert all disturbed area run off to the sedimentation pond, including the proposed north return air fan, receiving runoff from 10.7 acres (Appendix 7-4). The sedimentation pond will be mostly incised except at the downstream face, which will be an earthen embankment. The pond has been designed to contain the runoff from a 10-year, 24-hour precipitation event calculated to be 0.83 acre-feet. The permit area surfacing is described as a gravel parking lot. The full extent of gravel is not defined.

The operator has assumed sediment production of 0.05 acre-feet/acre from the disturbed area. The operator has not provided a technical method or calculation to determine where the 0.05 acre feet/acre comes from, Appendix 7-4. However, the final design allowed 1.48 acre-feet for maximum sediment storage, which is closer to 0.1 acre-foot/acre per year sediment production for disturbed areas and is considered a conservative estimate. Although the maximum sediment storage is considered adequate at this time, if the operator should need additional increases in the sedimentation pond capacity the 0.05 acre feet/acre will not be considered valid until demonstrated to meet standard through accepted design methods. The operator must remove the discussions of excess design capacity or provide technical design information.

The total capacity of the pond below its emergency spillway will be 2.3 acre-feet. The sediment will be cleaned out of the pond at 60% of the total sediment volume, or 0.88 acre-feet. The cleanout volume will be marked by a calibrated pole. One pole is generally not adequate to determine sediment capacity because the sediment tends to be deposited in deltaic form at the inlets. The operator will be expected to maintain the capacity required for runoff volume.

The pond will also have a 2" decant pipe with a locking valve. Twenty-four hours after a storm, the pond is to be drained by opening the valve on the two inch decant line in the pond. This valve is to remain locked at all times except when decanting storm runoff. The inlet of the decant line is to be located at an elevation of 7576.0 feet, which is 24 inches above the 60% cleanout level and 3.4 feet below the elevation of the spillway.

Should the quantity of water encountered in mining exceed the amount required by the underground operations the operator proposes the water be treated by the sediment pond in order to meet

OPERATION PLAN

effluent standards. This action may be used as an emergency measure but is not an approved design. The use of the pond for this purpose would need to be approved prior to handling any runoff which might exceed the design requirements.

The sediment pond's spillway is designed to pass the peak flow of the 25-year, 6-hour precipitation event. Calculations for the spillway assume the pond is full to the elevation of the spillway prior to the onset of the event. With a depth of 2.3 feet, a width of 10 feet and side slopes of 2h:1v, the spillway will have 2 foot of freeboard between the top of the pond embankment and the maximum flow elevation. The operator designed a non-erodible, open channel emergency spillway for which the outlet will have a riprap with a D50 of 4 inches. However, no filter blanket designs were included.

Although the spillway designs meet the requirements of a single -open channel spillway design under R645-301-743.00, the spillway does not provide the protection of aquatic life through providing an oil skimmer. Because this pond will be receiving oils and grease from the site the pond should provide for some type of oil skimmer.

Pond designs, maps and calculations have been prepared under the direction and certification of Richard H. White (State of Utah, Registered Professional Engineer #7102). The information and calculations contained in Appendix 6E are also certified by Mr. White.

The pond safety factor calculations assume an 11-ft embankment height and a slope angle of 2H:1V (26.56 degrees). The soils are assumed to have soil cohesion and friction angle of 35 psi and 30 degrees respectively, which results in a safety factor of 4.81 dry and 4.44 saturated conditions.

Siltation Structures: Other Treatment Facilities

There are no Other Treatment facilities as defined in the R645 Coal Rules. Two small areas above the disturbed area have been proposed for alternate sediment control. Appropriate sediment control measures will be designed, constructed and maintained using the best technology currently available to prevent, to the extent possible, additional contributions of sediment to stream flow or to runoff outside the permit area and meet the effluent limitations under R645-301-751. [06/02/2005]

Siltation Structures: Exemptions

No exemptions requested by the operator.

Discharge Structures

The sedimentation pond discharge structure is discussed under Siltation Structures.

Impoundments

The sedimentation ponds are the only impoundments planned for this operation. [06/02/2005]

OPERATION PLAN

Ponds, Impoundments, Banks, Dams, and Embankments**Casing and sealing of wells**

The operator has stated that approvals and permits to drill wells will be received from the Division of Water Rights and appropriate Government agencies. The final casing and sealing of wells is discussed in more detail in the section entitled **MINE OPENINGS** under **RECLAMATION PLAN** below.

Water Replacement

The Permittee's water-replacement commitments address elements of both R645-301-731.530 and R645-301-525.480, but the Permittee's commitments to replace water supplies and the methods described to carry out such replacement are sufficient to meet the requirements of the Coal Mining Rules. (6/2/2005)

Findings:

Operation Plan Hydrologic Information is adequate to meet the requirements of the Coal Mining Rules. (6/2/2005)

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

All support facilities are described in the MRP

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Surfaces above the Federal Lease UTU-74804 are private or inaccessible lands. No signs or markers other than water monitoring location markers will be installed. The Permittee has supplied sufficient information for this section.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

General Requirements

The Permittee will submit blasting plans prior to blasting. (6/2/2005)

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Affected Area Maps

Plate 1-1 shows the permit boundaries. The Division considers the permit boundary to be identical to the affected area. The Division reviewed the Plate 1-1 and found it to be adequate.

The boundaries of the disturbed area, as well as those of its component areas of previous and proposed disturbance, are shown adequately on Plates 3-1, 3-6, and 3-7.

Mining Facilities Maps

The locations and approximate dimensions of all mine facilities are shown on Plate 3-1--Surface Facilities. In This plate was certified by a professional engineer registered in the state of Utah.

Design details of the sediment pond are shown on Plate 7-6--Sedimentation Pond Detail Map. This plate was certified by a professional engineer registered in the state of Utah.

OPERATION PLAN

Mine Workings Maps

The mine-workings map, Plate 3-3, shows the projected angle-of-draw and the positions of the bounding faults of the graben. Plates 3-9 and 3-10 show the location and extent of known workings of active, inactive, or abandoned underground workings, including openings to the surface, within the permit and adjacent areas; also, areas within these mines that have been second mined. No previously surface-mined areas are known to exist within the permit area. (6/2/2005).

Monitoring and Sampling Location Maps

Both geologic and ground-water information were obtained from test borings done at sites designated LMC-1, LMC-2, LMC-3, and LMC-4. The locations of these sites are shown on Plate 6-1--Geology and Plate 7-1--Water Monitoring Locations.

Information on water quality and quantity was obtained from monitoring stations designated 1, 2, 3, 4, 5, 6, and 7. The elevations and locations of these sites are shown on Plate 7-1--Water Monitoring Locations.

Certification Requirements**Findings:**

The Permittee has submitted sufficient information to address this section.

Page 64
C/007/0020
April 10, 2008

OPERATION PLAN

RECLAMATION PLAN

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

The only surface disturbance that has occurred on Federal Lease UTU-74804 is the development of water monitoring wells. Plans have been presented in the MRP that describe how the wells will be reclaimed.

Findings:

The Permittee has submitted sufficient information to address this section.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

No surface disturbance other than minimal subsidence will take place on the Federal Lease UTU-74804. The post mining land use for the area included in this application will remain the same as premining conditions, i.e. grazing, logging, mining, recreation and wildlife habitat.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

No surface disturbance on Federal Lease UTU-74804 is anticipated other than minimal subsidence. Beaver Creek and several springs and ponds are adjacent to or lie within the proposed permit area. The Permittee is currently monitoring Beaver Creek and certain springs, and wells in the proposed addition to the permit area (plate 7-1). The Permittee has proposed to maintain a 100' Buffer zone along beaver Creek to prevent impacts to the stream. Subsidence will be monitored during mining and for a period of two years following final cessation of mining practices. The subsidence monitoring points are identified on plate 3-3 of the application. The Permittee has been requested to develop and implement a mitigation and protection plan under the Fish and Wildlife Information section of this document. (6/2/2005)

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The Federal Lease UTU-74804 proposal extends the underground operations. There is no change to the approved reclamation plans. AOC will be met.

Findings:

The Permittee has submitted sufficient information to address this section.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

RECLAMATION PLAN

Analysis:

General

Plate 3-1 shows the location of the sediment pond and ditch clean out material (behind the substation and behind the fan). The designated areas can hold 260 CY. The material may be sampled for use as substitute topsoil or fill material.

Contemporaneous reclamation is discussed in Section 3.5. Plate A of Appendix 8-1 shows areas, which were contemporaneously reclaimed in 1997. This work is discussed in Section 8-8.

General plans for backfilling and grading are found in Section 3.5.4. Plates 3-7 and 3-7A show the topography post-mining. Cut and fill calculations are in Table 3-1. There is a 4,240 CY deficit, which will require lowering the site 5 inches.

Findings:

There is no change from the approved reclamation plan.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

No new mine openings are proposed under the addition of Federal Lease UTU-74804 . Closure and reclamation of mine openings is discussed in Section 3.5.3.1.

Findings:

Mine Openings information for the Reclamation Plan is adequate to meet the requirements of this section.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

RECLAMATION PLAN

Twenty inches of topsoil will be placed over 8.23 acres of graded fill (Section 2.117). The figure of 9.15 acres was used for bonding purposes and is listed in (Section 3.5.4 and Table 3-1). This amounts to approximately 14,417 CY of topsoil (Section 3.5.4 and Appendix 8-1). There is no change from the approved reclamation plan.

Redistribution

Findings:

Sufficient information has been provided to meet this section of the regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Reclamation

No roads or transportation facilities will be affected as a result of the addition of Federal Lease UTU-74804 to the permit area. The plan contains information to show that no roads or transportation facilities overly Federal Lease UTU-74804.

Retention

Findings:

Sufficient information has been submitted to address this section.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

RECLAMATION PLAN

The reclamation plan is discussed in detail in Section 3.5 of this permit application. The Permittee has provided information in the MRP to show they will conduct reclamation activities on the minesite at completion of mining. Reclamation plans dealing with ground water are identified in the approved permit. The reclamation criteria extend to the Federal Lease UTU-74804 area. (6/2/2005)

All surface and ground-water monitoring will continue throughout the reclamation period. The Permittee will monitor for acid or toxic materials and provide treatment if adverse conditions occur. Wells will be sealed and the sites reclaimed. There will be no discharges into the underground mine. The mine will be sealed and no gravity discharge is expected. All diversions will be removed and flow distributed over the surface. Sediment control measures will be implemented using the best technology available during reclamation. Sediment ponds will remain until vegetation is established and effluent limitations are met.

Four holes have been (HZ-1, HZ-2, HZ-3, and HZ-3HZ01-6-1) drilled and completed as monitoring wells within the uppermost saturated zone beneath the Hiawatha coal seam to better predict the potential of inflow into the mine. When no longer needed for monitoring or other use approved by the UDOGM and upon a finding of no adverse environmental or health and safety effects, or unless approved for transfer as a water well, each well or boring will be capped, sealed, backfilled, or otherwise properly managed, as required by regulations. (6/2/2005)

No oil and gas exploration or production wells are located in the permit area.

Subsidence of the sediments overlying the mining area will be monitored. A detailed description of the subsidence monitoring plan, including a map illustrating the location of monitoring stations, is presented in Section 3.4.8. (6/2/2005)

Findings:

The Permittee has submitted sufficient Reclamation Plan information to meet the minimum requirements of the regulations. (6/2/2005)

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

RECLAMATION PLAN

No surface disturbance in Federal Lease UTU-74804 is anticipated other than minimal subsidence. Mining practices would have a minimal effect on the vegetation resources. Potential impacts to vegetation caused by subsidence during active mining operations may be mitigated by implementing Contemporaneous reclamation practices as described in Section 3.5.1 of the reclamation plan.

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

No surface disturbance in Federal Lease UTU-74804 is anticipated other than minimal subsidence. Mining practices would have a minimal effect on the vegetation resources. Potential impacts to vegetation caused by subsidence during active mining operations may be mitigated by implementing Contemporaneous reclamation practices as described in Section 3.5.1 of the reclamation plan.

Revegetation: General Requirements

The general requirements for revegetation are provided for in Section 3.5 of the reclamation plan.

Revegetation: Timing

The approximate schedule for reclamation activities is outlined in table 3-4 of Section 3.5.7.1 of the reclamation plan.

Revegetation: Mulching and Other Soil Stabilizing Practices

Sections 3.5.4.3, 4, 5.1.2, and 3 of the reclamation portion of the plan and proposal describe the mulching and other stabilizing practices to be implemented during reclamation.

Revegetation: Standards For Success

The standards for success are provided for in Section 3.5.6 of the reclamation plan.

RECLAMATION PLAN

Findings:

Information provided in the proposal is adequate to meet the requirements of this section of the regulations.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

The backfilling and grading schedule is detailed in Section 3.5.7.1 and outlined in Table 3-4.

All acid-toxic material, exposed coal or refuse will be covered with 4 feet of material. The regraded surface will be scarified. Topsoil will be replaced.

Silt fences will be used at the bottom of fill slopes and along the reclamation channel during topsoil placement. The site will be seeded and mulched as described in Section 3.5.5.3 (1 ton mulch/acre) and Section 3.5.4. Erosion control matting on slopes 2½H:1V or greater and sediment controls will be placed as needed (Plate 7-7a; Section 3.5.4.3).

Findings:

There has been no change to the approved reclamation plan

CESSATION OF OPERATIONS

Regulatory Reference: 30 CFR Sec. 817.131, 817.132; R645-301-515, -301-541.

Analysis:

Federal Lease UTU-74804 extends the underground operations. There is no change to the approved reclamation plans.

Findings:

Federal Lease UTU-74804 extends the underground operations. There is no change to the approved reclamation plans.

Ground-water monitoring

Analysis:

Both geologic and ground-water information were obtained from test borings done at sites designated LMC-1, LMC-2, LMC-3, and LMC-4. The locations of these sites are shown on Plate 6-1--Geology and Plate 7-1--Water Monitoring Locations.

Information on water quality and quantity was obtained from monitoring stations designated 1, 2, 3, 4, 5, 6, and 7. The elevations and locations of these sites are shown on Plate 7-1--Water Monitoring Locations.

Findings:

The Permittee has submitted sufficient information to address this section.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Plate 1-1 shows the permit boundaries. The Division considers the permit boundary to be identical to the affected area. [06/02/2005)

Bonded Area Map

Plate 1-1

Reclamation Backfilling And Grading Maps

Plate 7-7A

Reclamation Facilities Maps

Federal Lease UTU-74804 extends the underground operations. There is no change to the approved reclamation plans.

RECLAMATION PLAN

Final Surface Configuration Maps

Plate 3-7 and 3-7A

Reclamation Monitoring And Sampling Location Maps

Both geologic and ground-water information were obtained from test borings done at sites designated LMC-1, LMC-2, LMC-3, and LMC-4. The elevations and locations of these sites are shown on Plate 6-1--Proposed No. 1 & 2 Mine Geologic/Structure Map, Plate 7-1--Hydrology Map, and Plate 7-2--Drill Hole Data of the Horizon Mine Area. These plates were certified by a professional engineer registered in the state of Utah.

Information on water quality and quantity was obtained, and will continue to be obtained through final reclamation, from monitoring stations designated 1, 2, 3, 4, 5, 6, and 7. The elevations and locations of these sites are shown on Plate 7-1--Hydrology Map. This plate was certified by a professional engineer registered in the state of Utah.

Vegetation information was obtained, and will continue to be obtained through final reclamation, from transects done at locations designated A through E. These locations are shown on Plate 9-2--Vegetation Map No. 2. This plate was certified by a professional engineer registered in the state of Utah.

A network of subsidence monitoring stations will be established, subsidence data from which will be submitted to the Division with each Annual Report. Monuments will be steel rebar with aluminum caps. There will be a total of 26 stations: four base stations and 22 monitoring stations, five of which will be above Beaver Creek. The locations of all subsidence monitoring stations are shown on Plate 3-5--Subsidence Monitoring Plan. Plate 3-5 was certified by a professional engineer registered in the state of Utah.

Reclamation Surface And Subsurface Manmade Features Maps

Plate 3-1 shows surface contours of undisturbed areas adjacent to disturbed areas that are indicative of the original land slopes in the vicinity of the disturbed area and which were used to create the reclamation final contour maps Plates 3-7 and 3-7A. Plate 3-6 shows conditions prior to disturbance by Horizon.

Reclamation Treatments Maps

Plate 7-7A

Certification Requirements.

Findings:

There has been no change to the approved reclamation plan.

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

General

Form of Bond

Federal Lease UTU-74804 extends the underground operations. There is no change to the approved reclamation plans.

Determination of Bond Amount

The Division reviewed the reclamation and found that no additional surface disturbance would take place. Therefore, the Division found that the bond does not have to be adjusted at this time.

Terms and Conditions for Liability Insurance

Federal Lease UTU-74804 extends the underground operations. There is no change to the approved reclamation plans. Liability insurance will continue.

Findings:

The Permittee has submitted sufficient information to address this section.

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

The CHIA was updated when the south part of Federal Lease UTU-74804 was added to the permit in 2001. That revision included assessment of the entire federal lease UTU-74804. The Division has updated the CHIA for the 2005 Permit Boundary Expansion amendment, a significant revision, but there were no major changes. [06/02/2005 JDS]

Findings:

The Division has updated the CHIA as needed for the 2005 Permit Boundary Expansion amendment, a significant revision to the mine plan.

Page 76
C/007/0020
April 10, 2008

CHIA

APPENDICES

APPENDICES

Page 78
C/007/0020
April 10, 2008

APPENDICES

SUMMARY OF COMMITMENTS

SUMMARY OF COMMITMENTS

The summary below presents a list of commitments stated within the mining and reclamation plan (MRP). This list provides the following information for each commitment, when applicable:

- Title.
- Objective.
- Frequency.
- Status.
- Reports.
- Citation.

BEGIN COMMITMENT LIST BELOW

Page 80
C/007/0020
April 10, 2008

SUMMARY OF COMMITMENTS

PERMIT INFORMATION TABLE

PERMIT INFORMATION TABLE

O:\007020.HZN\FINAL\WG2922\WG2922fin.doc